

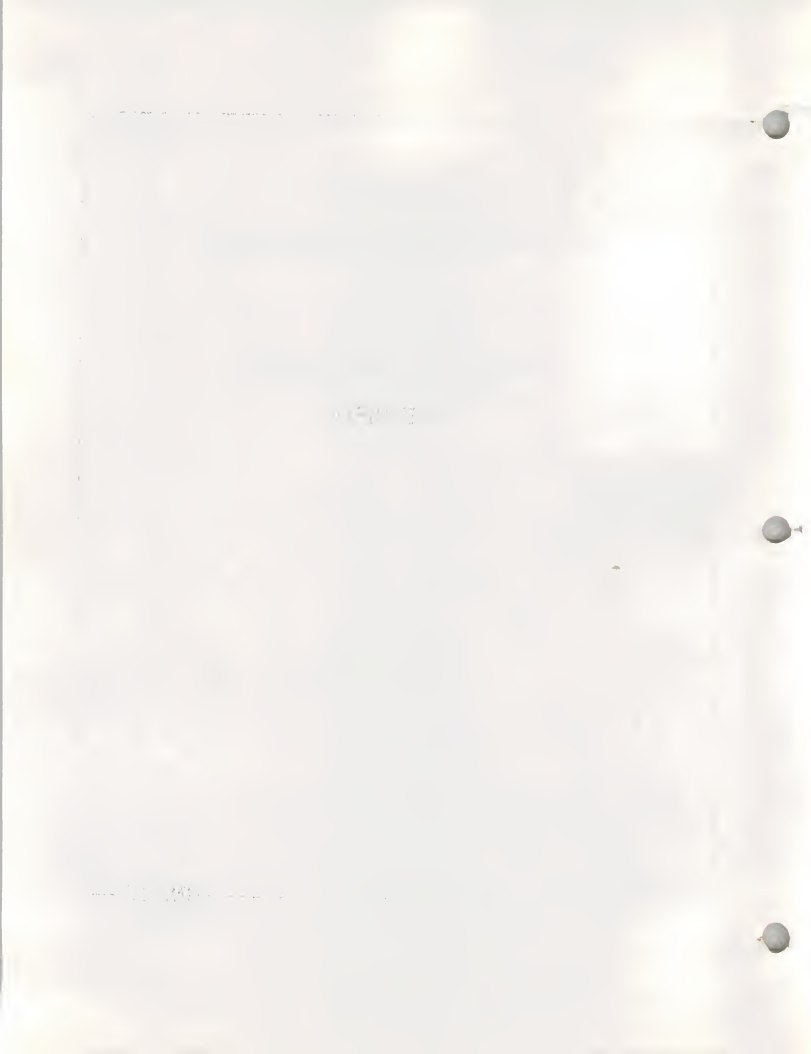
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IBM CSD Market Research

**SUPPORT SERVICES
DATA BOOK**

August 1983

INPUT



OVERVIEW

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IBM SERVICES BUSINESS

SUPPORT SERVICES DATA BOOK

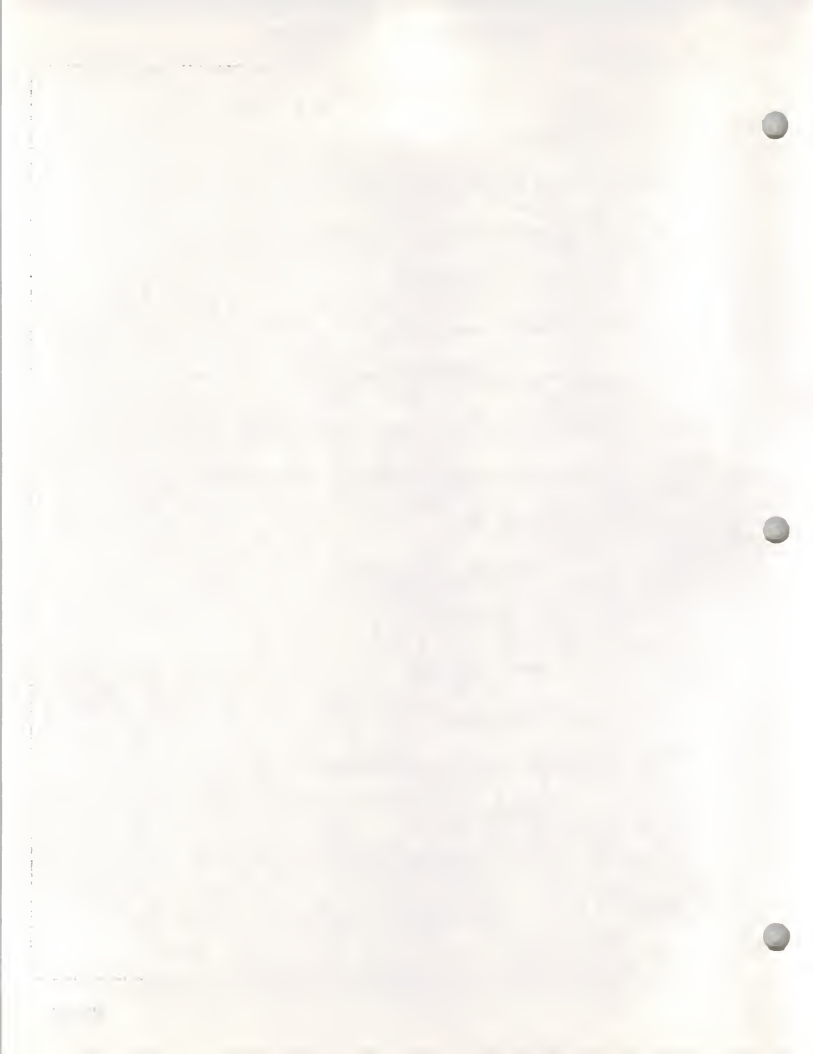
A. INTRODUCTION

- o This data book is designed for easy reference of fundamental facts, figures and trends on the main computer-related product markets in the United States. It is intended to allow regular updates as necessary and to act as a reference guide to revenue sources, characteristics, and support service requirements.
- o All equipment is classified into one of thirteen categories:
 1. Personal computers (home).
 2. Personal computers (business).
 3. Workstations.
 4. Other systems under \$25,000 purchase price.
 5. Systems between \$25,000 and \$35,000 purchase price.
 6. Systems over \$350,000 purchase price.
 7. Displays.



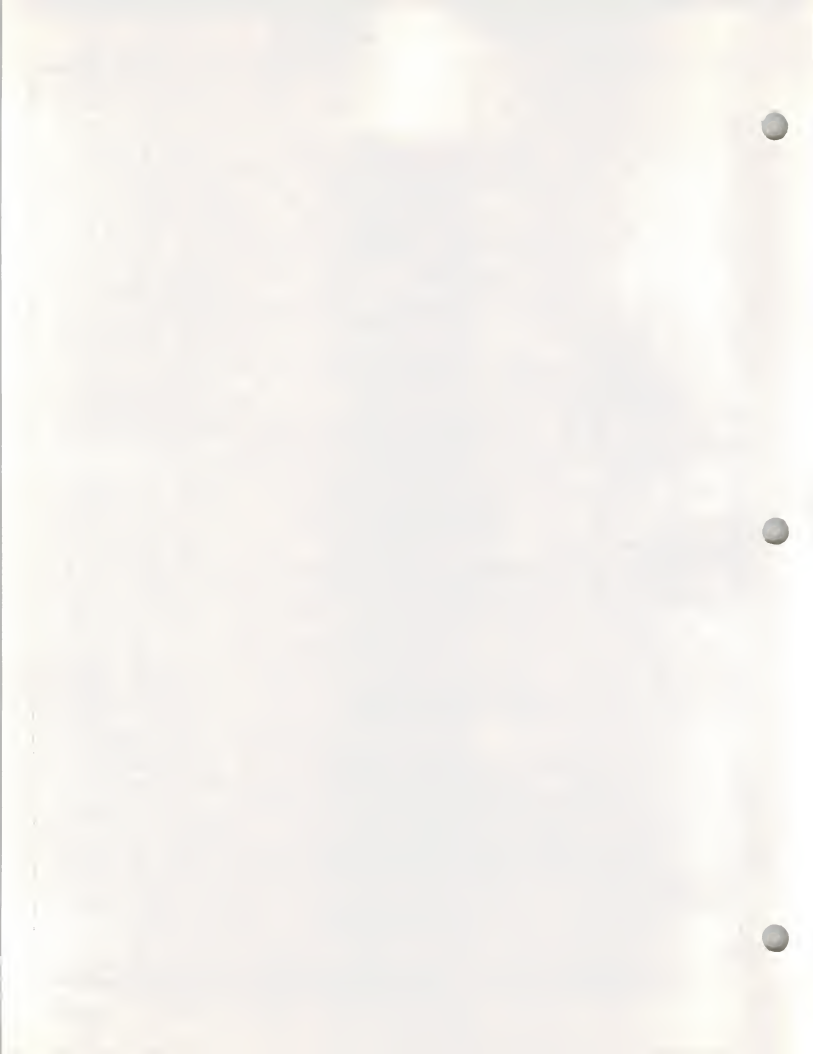
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8. Printers/copiers/plotters.
 9. Point-of-sale devices.
 10. Other peripherals.
 11. Telecommunications equipment.
 12. Typewriters/word processors.
 13. Banking equipment (excluding processors).
- o Use the numbered dividers to reference the above categories.
 - o Within each category, the following overview data is supplied:
 - A. Environment overview.
 1. Definition of product category.
 2. Market environment, 1982.
 3. Revenue size, 1982.
 4. Leading vendors.
 - B. Revenues, 1982-1987 (and growth rates).
 1. Revenue forecast.
 - Hardware shipments.
 - Software sales.



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- After-sales support.
- 2. Hardware support.
 - Maintenance.
 - Education.
 - Over-the-counter parts.
- 3. Software support.
 - Maintenance.
 - Education.
 - Installation.
- C. Support services requirements and issues.
 - 1. Current.
 - 2. Future.
 - 3. Decision maker expectations.
- D. Technology issues affecting support.
- E. Elements of service offerings.
- F. Marketing practices (affecting service).

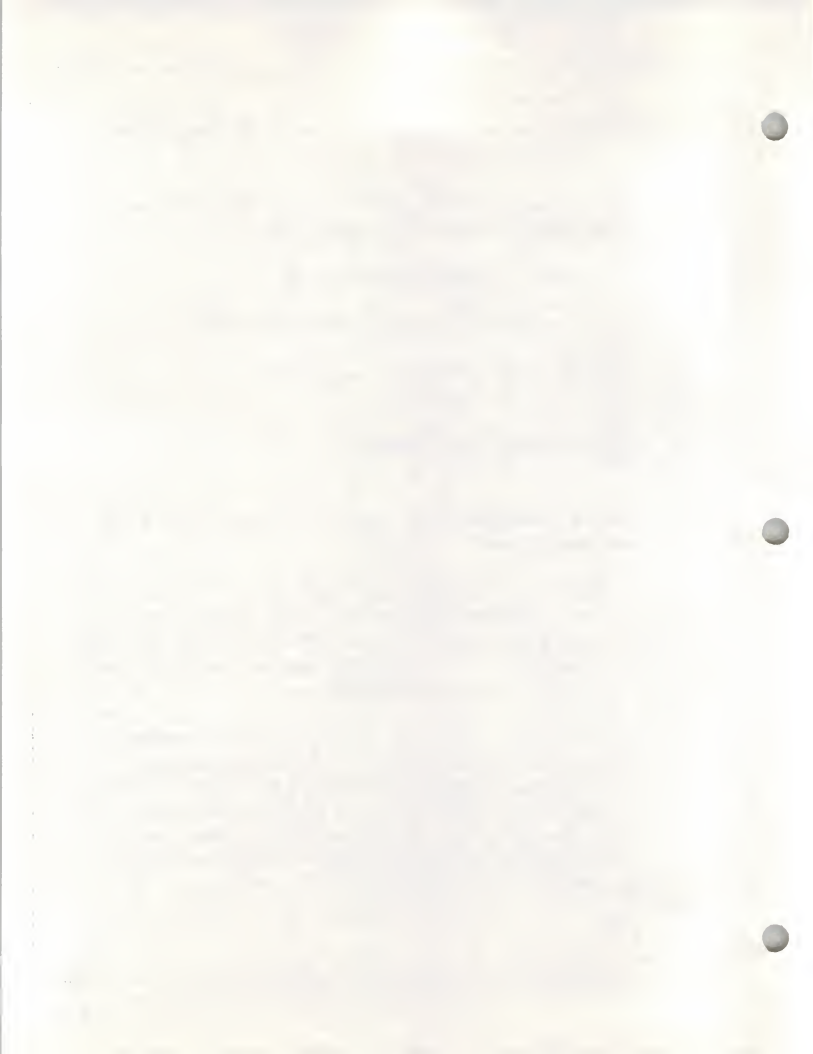


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- G. Module categories (suggested breakdown of the category for more detailed tracking).
- In order to make the forecasts and market sizes presented in this report as precise as possible, the information is graded as follows:
 - Grade I - very reliable (i.e., substantiated data).
 - Grade II - reliable (i.e., generally believed to be valid).
 - Grade III - best available (i.e., unsubstantiated).

B. CROSS-CATEGORY SERVICE ISSUES

- There are several categories of issues that recur across many of the different categories of equipment. They include:
 - The constant erosion of hardware prices, which is important to the service organization because service pricing has been related to the cost of hardware in the past. These prices have formerly reached the user in the form of a standard ratio (of service price to system price), but these ratios are now being challenged.
 - The evolution of the role of field service: the duties encompassed by the field service organization for which they have prime responsibility have slowly expanded from hardware maintenance alone to hardware and system software maintenance. The evolution does not stop there and, according to the category of equipment, is expected to expand to include consulting, systems training, documentation, add-on sales, and other functions not usually performed by field services.

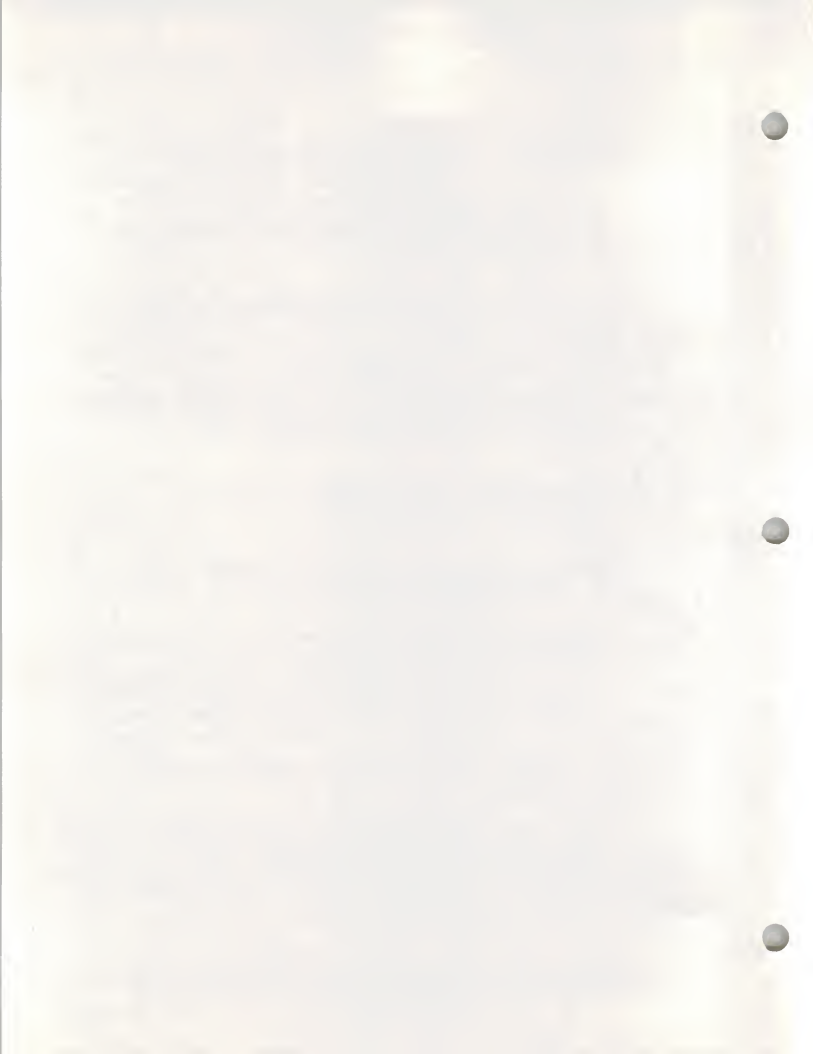


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- The arrival of local area networks (LANs) is expected to accelerate the use of networks in general across the spectrum of products covered in this data book. The impact of their use on field services is not quantifiable in every case, but it is expected to be broad and far reaching. One significant impact is expected to be on the skill mix required of the average field engineer.
- The use of a broadening mix of distribution channels affects field service with regard to the support services that are needed (e.g., distributor parts handling, support infrastructure) and their overlap with standard service offerings provided by direct-support services. Many products that heretofore were sold only by direct sales are being opened up to the value-added reseller (e.g., the IBM 4300).

C. FUNDAMENTAL SERVICE REQUIREMENTS

- The fundamental trends and motivations that form the baseline of all service requirements, independent of product category, are as follows:
 - Data dependence: user requirements for response time, system availability, and repair time are directly proportional to the criticality of the data being processed. Where the need for accuracy and timeliness of data is high, the need for low response time, high system availability, and low repair time is correspondingly high. Services for products that process this kind of data are mainly performance sensitive, not price sensitive.
 - Asset value protection: the higher the value of the equipment, the less price sensitive is the need for service. This is complemented by a demand for "extended service options" that are limited customizations of standard services.



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- Visible need for maintenance: where the apparent need for maintenance is low, selling service is difficult, and price sensitivity is very high. For example, PC users do not perceive a need for maintenance (however wrong their assumption might be). It is therefore not easy to sell the average PC owner an annual maintenance contract (estimates say 60% have no maintenance contract), and the level of price acceptance is low (close to break-even).

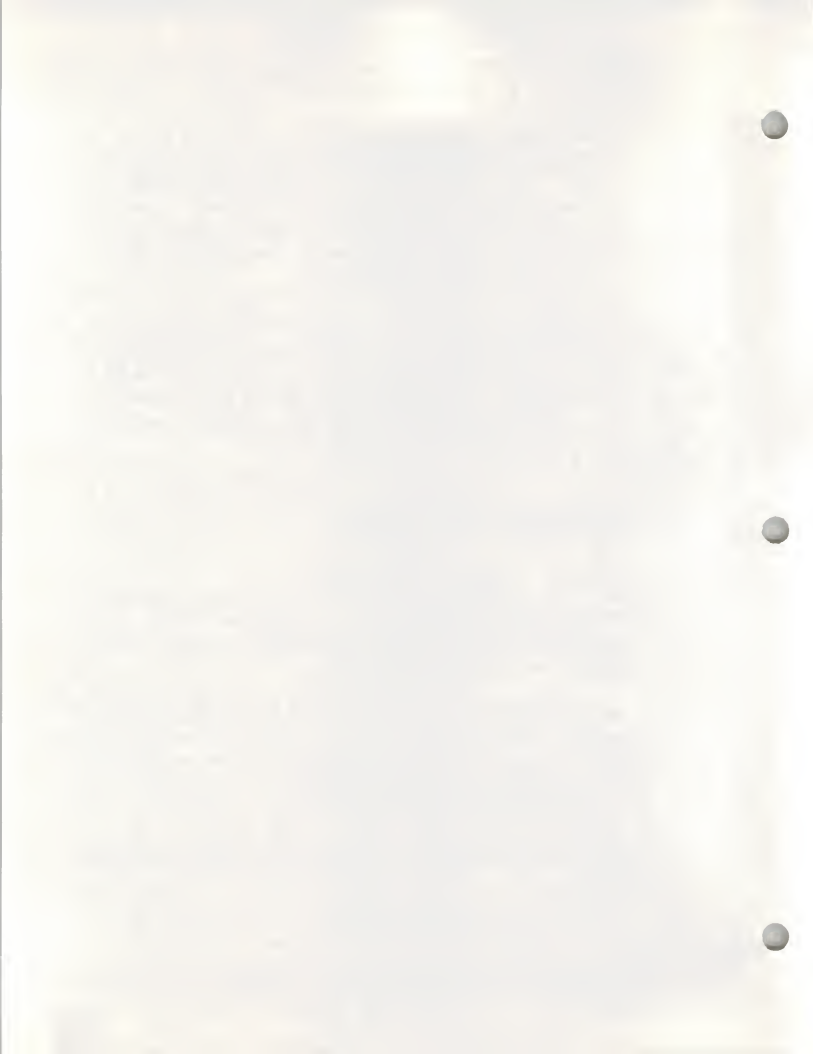
- Quality and reliability: these are the two essential characteristics of a product, and both are perceived values rather than actual ones (Hewlett-Packard has a perceived image of quality and reliability above that of most vendors; actual measured values of HP products in the field do not support this). Service is the key component that determines these values in the mind of the user.

D. ROLE AND VALUE OF FIELD SERVICE

- Field service is no longer a problem fixer but a provider of after-sales support; it is not a necessary expense, it is a growth provider and image generator. Field services' role is to manage, develop, and service the installed base through the concept of total customer service.

- Field service contributes strongly to revenue growth and profitability: in the U.S., field service revenue contribution averages 20% of most computer company revenues, and profit contributions are as high as 15%. Revenue growth opportunities are considerable, particularly in software maintenance and system consulting.

- Field service contributes in many other ways to the success of computer vendors:



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- To sales: by establishing a reputation of quality customer support, commitment to customer operations, and reliability of the products supported.
- To account development: by providing guidance on system upgrades, bottleneck resolution, and planning according to users' needs.
- To customer satisfaction: by providing an ongoing communications link between the user and the company, by anticipating problems, and by helping to resolve them.

E. SUPPORT SERVICES REVENUE

- Support services revenue, composed of hardware maintenance, education, and over-the-counter parts, plus software maintenance, education, and installation revenues, exceeded \$10 billion in 1982, as shown in Exhibit I-1. The smallest contributors were software support services (\$724 million, or only 7%), but future growth is going to depend heavily on this sector.
- The overall growth rate is expected to be 21% between 1982 and 1987, which would project the total support services revenues to over \$26 billion, as shown in Exhibit I-2, by the end of the period - equivalent to over 75% of the total worldwide IBM revenues today.

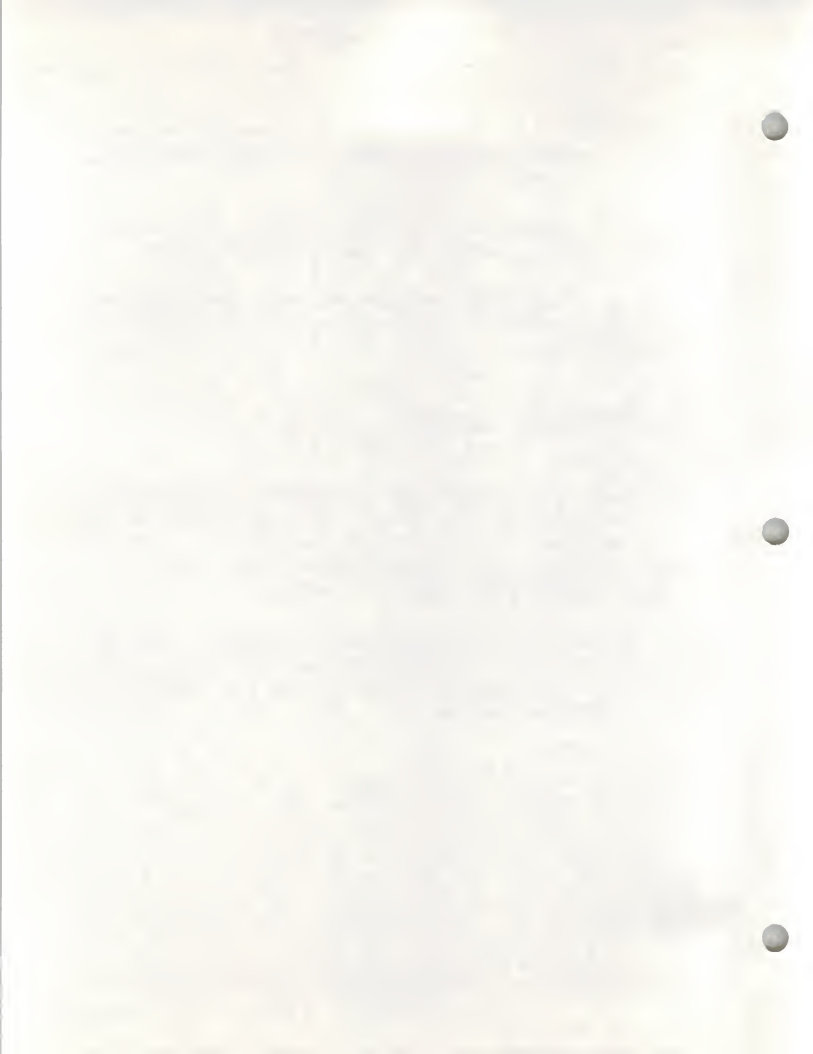


EXHIBIT I-1

U.S. 1982 SUPPORT SERVICES REVENUE
(\$ million)

Number	EQUIPMENT CATEGORY	HARDWARE			SOFTWARE			TOTAL
		Maintenance	Education	Over The Counter Parts	Maintenance	Education	Installation	
1	Personal Computers (home)	10	5	45	*	*	*	60
2	Personal Computers (business)	100	5	260	*	10	*	375
3	Workstations	135	*	40	10	*	*	185
4	Systems ≤ \$25K	1220	25	230	215	*	15	1705
5	Systems > \$25K ≤ \$350K	480	15	46	90	15	4	650
6	Systems > \$350K	1839	54	58	281	47	17	2296
7	Displays	555	*	180	*	*	*	735
8	Printers/Copiers/Plotters	680	*	170	*	*	*	850
9	Point of Sale Devices	45	1	9	10	*	*	65
10	Other Peripherals	1090	*	200	*	*	*	1290
11	Telecom Equipment	360	*	40	*	*	*	400
12	Typewriters/Word Processors	1440	10	120	10	*	*	1580
13	Banking Equipment	23	*	3	*	*	*	26
TOTALS		7977	115	1401	616	72	36	10217

* negligible

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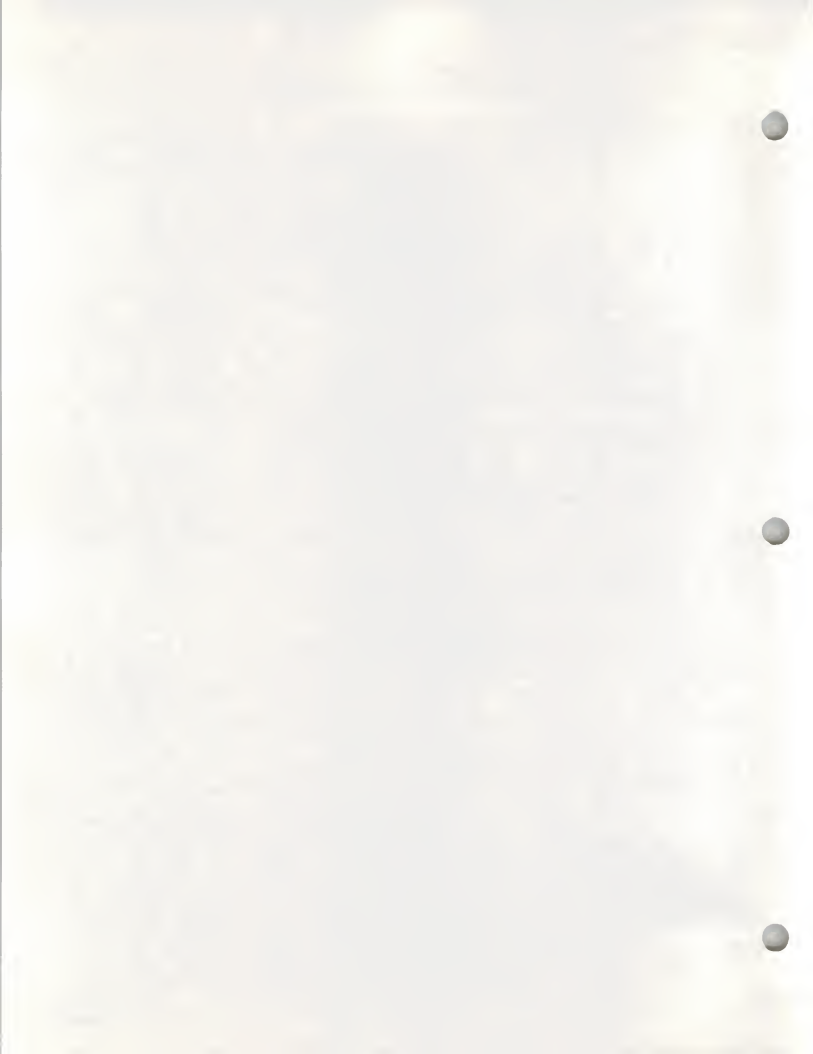
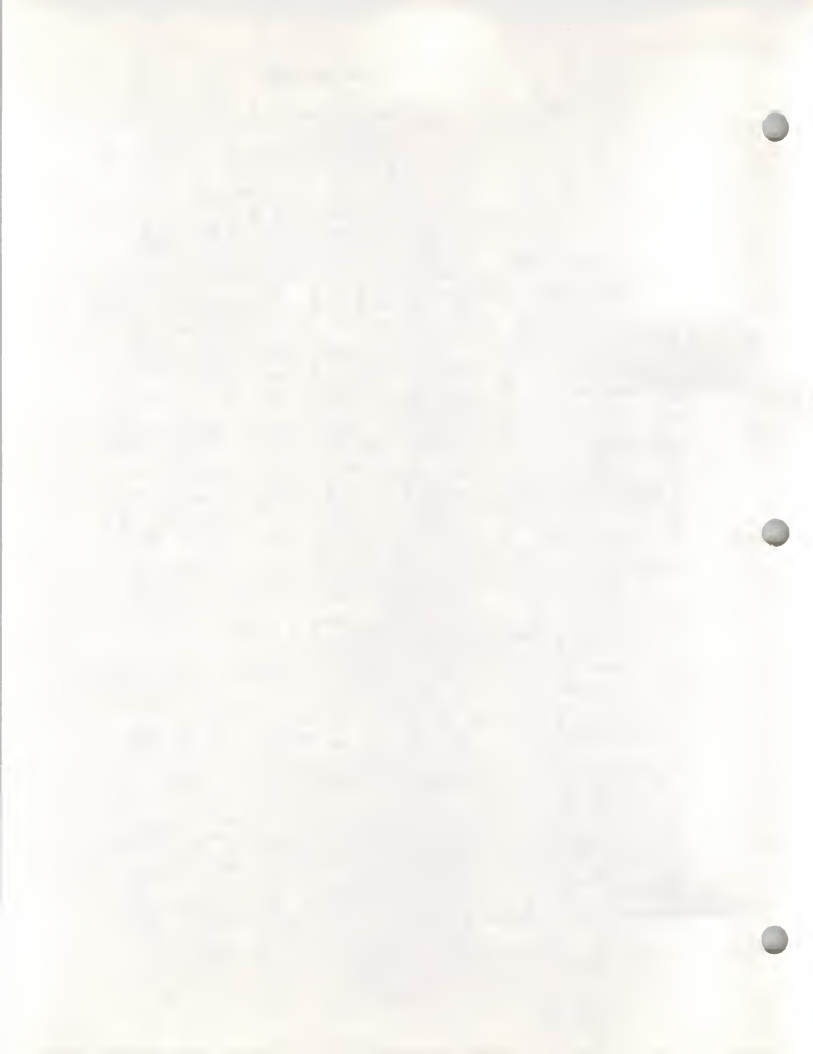


EXHIBIT I-2

U.S. 1987 SUPPORT SERVICES REVENUE
(\$ million)

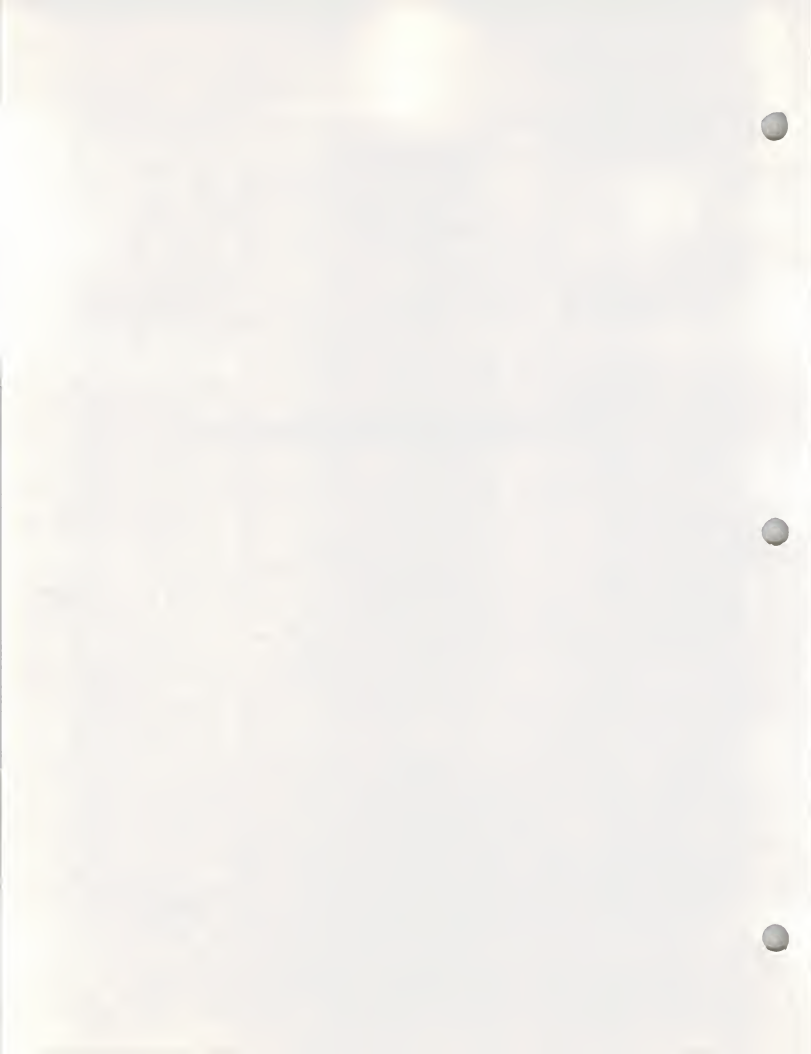
Number	EQUIPMENT CATEGORY	HARDWARE				SOFTWARE		
		Maintenance	Education	Over The Counter Parts	Maintenance	Education	Installation	TOTAL
1	Personal Computers (home)	100	15	50	5	10	*	180
2	Personal Computers (business)	400	30	750	20	50	*	1250
3	Workstations	500	*	170	20	5	*	695
4	Systems ≤ \$25K	3400	75	700	740	*	55	4970
5	Systems > \$25K ≤ \$350K	965	34	86	310	45	15	1455
6	Systems > \$350K	4090	125	105	735	143	52	5250
7	Displays	1574	*	582	*	*	*	2156
8	Printers/Copiers/Plotters	2140	*	560	*	*	*	2700
9	Point of Sale Devices	103	3	24	28	*	2	160
10	Other Peripherals	2400	*	550	*	*	*	2950
11	Telecom Equipment	725	*	70	*	*	*	795
12	Typewriters/Word Processors	3583	27	270	45	*	5	3930
13	Banking Equipment	80	*	10	2	*	*	92
TOTALS		20060	309	3927	1905	253	129	26583

* negligible



1. PERSONAL COMPUTERS (Home)

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IBM SERVICES BUSINESS

Product Category

PERSONAL COMPUTERS (HOME)

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- Personal Computers (PCs) for the home are all single-station workstations used for educational purposes, limited budgeting, and personal affairs management. They are often bought with no clear purpose in mind other than family education. Home PCs typically cost less than \$800 in a workable configuration but can cost considerably less.

2. ENVIRONMENT

- The environment is characterized by extreme price erosion, which has been as high as 50% for smaller models. Documentation is generally poor, software is average quality, and sales support is often negligible. The majority of users (65%) have no maintenance contract and do not indicate they are converting to service agreements yet.

3. REVENUE (Grade II)

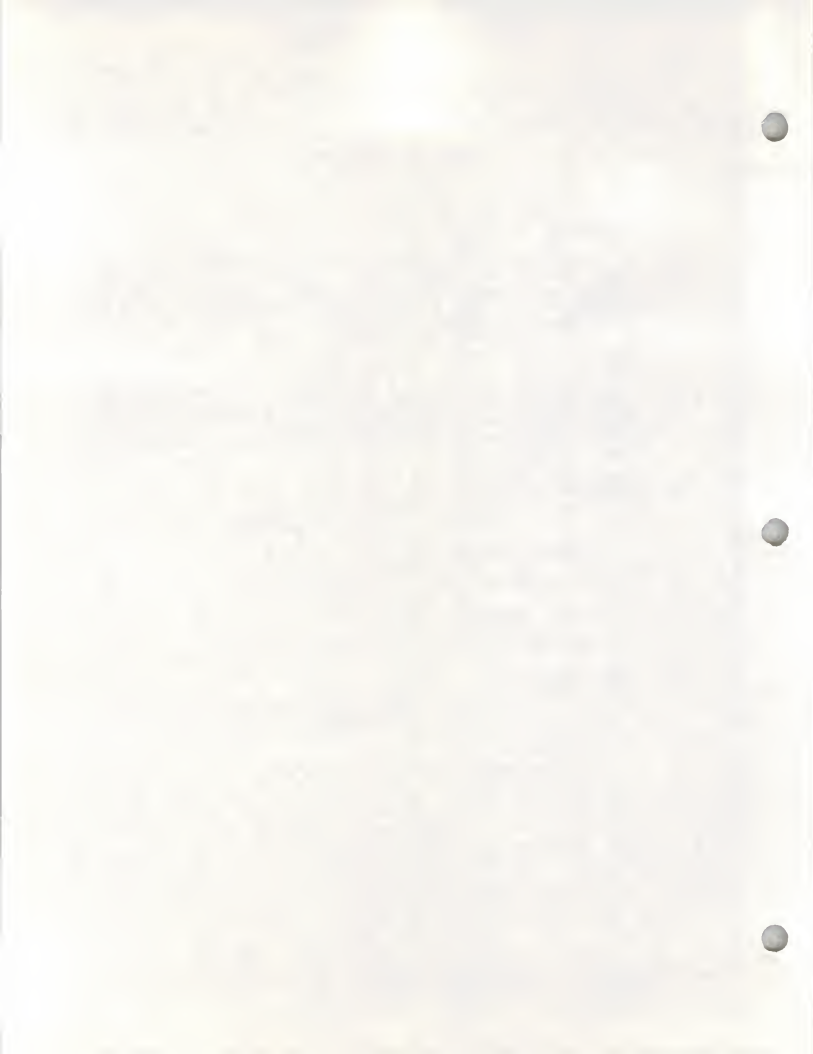
1982 (\$ millions)

- Hardware shipments	\$1,200
- Software sales	150
- After-sales support	<u>60</u>
TOTAL	<u>\$1,410</u>

4. LEADING VENDORS

Percent of 1982 User Expenditures

- Commodore	30%
- Texas Instruments	20
- Atari	16
- Tandy	8



IBM SERVICES BUSINESS

Product Category		PERSONAL COMPUTERS (HOME)		
Last Updated: <u>October 11, 1983</u>		Source: INPUT		Contact G. Kemp
B. REVENUES 1982-1987				
1.	<u>REVENUE FORECAST</u> (Grade II)	<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
-	Hardware shipments	\$ 1,200	\$ 2,300	14%
-	Software sales	150	2,000	68
-	After-sales support	<u>60</u>	<u>180</u>	<u>25</u>
	TOTAL	<u>\$ 1,410</u>	<u>\$ 4,480</u>	<u>26%</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 10	\$ 100	58%
-	Education	5	15	25
-	Over-the-counter parts	<u>45</u>	<u>50</u>	<u>2</u>
	TOTAL	<u>\$ 60</u>	<u>\$ 165</u>	<u>22%</u>
3.	<u>SOFTWARE SUPPORT</u> (Grade III)			
-	Maintenance	*	\$ 5	NA
-	Education	*	10	NA
-	Installation	<u>*</u>	<u>*</u>	<u>NA</u>
	TOTAL	<u>*</u>	<u>\$ 15</u>	<u>NA</u>
*	Negligible			



IBM SERVICES BUSINESS

Product Category	PERSONAL COMPUTERS (HOME)		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">C. SUPPORT SERVICES REQUIREMENTS AND ISSUES</p> <p>1. <u>CURRENT</u></p> <ul style="list-style-type: none">Neither hardware nor software support service is a major revenue source at present: education is accomplished mainly through self-tutoring; there are no installation fees; software maintenance is nonexistent; hardware maintenance is virtually so. The only major revenue source is over-the-counter parts. <p>2. <u>FUTURE</u></p> <ul style="list-style-type: none">Hardware costs will drop approximately 50% over the next five years (and would drop further, but increased functionality will partly offset manufacturing-induced cost reductions). Nevertheless, the home computer will be virtually a throwaway revenue source. Parts values will increase only slightly while volume triples - parts costs will be sharply eroded. Education requirements will increase as functionality/complexity increases. A small market for software support will emerge. <p>3. <u>DECISION MAKER (USER) EXPECTATIONS</u></p> <ul style="list-style-type: none">High reliability and self-maintenance by parts exchange will be expected, with uptime requirements doubled from their current levels. Uptime will be more of an issue as the usefulness of the home computer increases and evolves from games and toys to personal affairs management and business-related functions.			



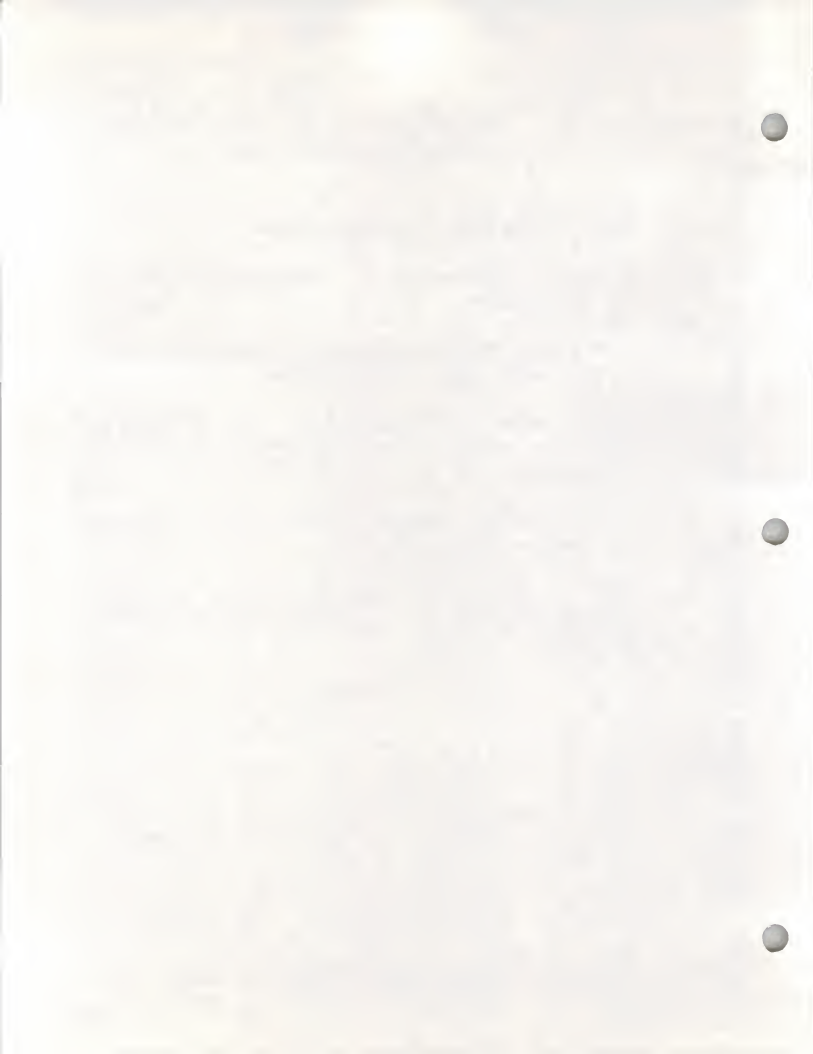
IBM SERVICES BUSINESS

Product Category	PERSONAL COMPUTERS (HOME)		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p>D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">• It is not relevant to talk about fault-tolerant systems for home computers since users are very tolerant of failure (currently experiencing an MTTR of two weeks).• Field-replaceable units are relevant if they can be used by end users without requiring a technician.• Remote diagnostics are not relevant.• Auto diagnostics are a must, but they must be supplemented by an order of magnitude improvement in manufacturing quality, reliability of essential parts, and overall ruggedness of design (the home environment is a very harsh one - something that a lot of manufacturers do not realize).• Staging of the products is necessary to eliminate the currently high dead-on-arrival ratios that aggravate users and retailers. Quality control is still inadequate.• The possibility exists of a classic Japanese takeover of this environment, relying on their proven strengths:<ul style="list-style-type: none">- Good reliability.- High quality control.- High-volume, low-cost manufacturing.- Sensitivity to the users' needs.			



IBM SERVICES BUSINESS

Product Category	PERSONAL COMPUTERS (HOME)		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">E. ELEMENTS OF SERVICE OFFERINGS</p> <ul style="list-style-type: none">• The two principal areas of home computer service are:<ul style="list-style-type: none">- Self-maintenance techniques and associated diagnostics, replaceable boards/subsystems.- Parts wholesaling/retailing distribution channels that reach the user at the lowest cost in the shortest turnaround time.• Current channels do not adequately support users and have contributed to the frustration and disenchantment that the home computer user feels about existing products.<ul style="list-style-type: none">- "They don't do much when they're working, and they are very hard to get repaired when they fail."• Reliability should replace traditional service offerings at this low end of the price range, supplemented by easy parts replacement (throwaway) when failures occur.			



IBM SERVICES BUSINESS

Product Category

PERSONAL COMPUTERS (HOME)

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

F. MARKETING PRACTICES

1. OVERVIEW

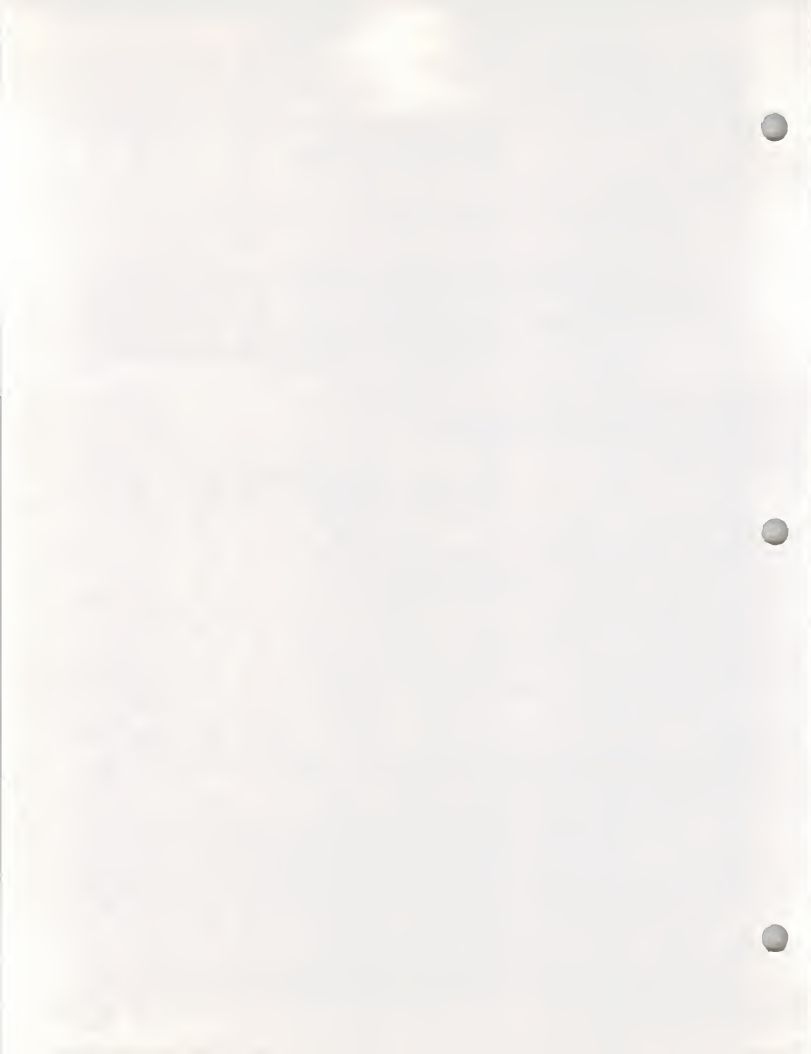
- Sales of home computers have moved from the computer store to the consumer electronics store to the catalog store to the mail order house. This trend will be partially reversed as the home computer's functionality and role move away from games toward the true home computer, and as software content increases.

2. DISTRIBUTION CHANNELS

<u>Sales, Percent by Value</u>		
	<u>1982</u>	<u>1987</u>
- Mail order	25%	20%
- Catalog store	20	10
- Consumer electronic store	20	10
- Computer store	25	45
- Direct	5	10
- Large retailers	5	5

3. PRICING AND DISCOUNTING

- Pricing has been put in lockstep with manufacturing costs, which have plummeted with sharply rising volume. This will continue through 1985, stabilizing at that time.
- Promotion and advertising has mimicked consumer goods: television, news media, credit card mailings, mail order catalogues, retail stores, etc.. This will gradually move toward the specialist press as data processing functionality increases.



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Product Category

PERSONAL COMPUTERS (HOME)

Last Updated: October 11, 1983

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Contact G. Kemp

G. MODULE CATEGORIES

- A suggested approach to redefining the home computer follows.
- Categories should be:
 - Video-games-based products.
 - Educational products (e.g., SpellStar).
 - Home process control (e.g., heating, sprinklers).
 - Communications products (e.g., electronic mail, home banking, videotext).
 - Personal affairs management (e.g., filing, budgeting).
- These categories basically follow the main applicational groups, which is a necessary distinction if sales, products, support, and service are to be able to target modules accurately.



2. PERSONAL COMPUTERS (Business)

INPUT



IBM SERVICES BUSINESS

Product Category

PERSONAL COMPUTERS (BUSINESS)

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- Personal Computers (PCs) for business are predominantly single-station personal productivity tools that are mainly used in a free-standing mode for business applications (independently of where they are sited). They are usually purchased for a single application need, but one used for an average of three applications. Business PCs have a minimum of 64K RAM monitor, external storage device and cost typically \$3,500 in a workable configuration.

2. ENVIRONMENT

- The environment is characterized by a 20% price erosion on hardware per annum, average quality software, poor documentation, and poor after-sales support. A large body of users (55%) have no maintenance contracts. Service accounts for 3% of retail outlet revenue.

3. REVENUE (Grade II)

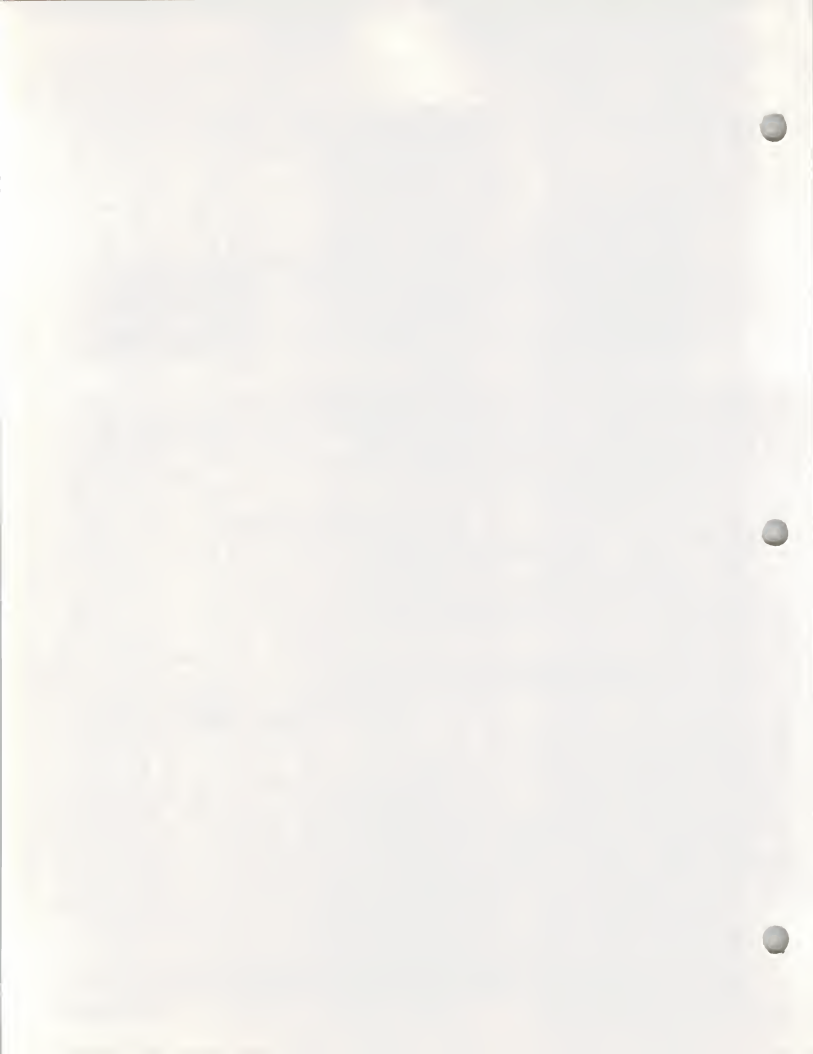
1982 (\$ millions)

- Hardware shipments	\$2,605
- Software sales	548
- After-sales support	<u>300</u>
TOTAL	<u>\$3,453</u>

4. LEADING VENDORS

Percent of 1982 User Expenditures

- IBM	23%
- Apple	18
- Tandy	17
- Commodore	10



IBM SERVICES BUSINESS

Product Category

PERSONAL COMPUTERS (BUSINESS)

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

B. REVENUES 1982-1987

1. REVENUE FORECAST (Grade II)

\$ Millions

	<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
- Hardware shipments	\$ 2,605	\$ 6,340	19%
- Software sales	548	2,457	35
- After-sales support	<u>375</u>	<u>1,250</u>	<u>28</u>
TOTAL	<u>\$ 3,528</u>	<u>\$ 10,047</u>	<u>23%</u>

2. HARDWARE SUPPORT (Grade III)

- Maintenance	\$ 100	\$ 400	32%
- Education	5	30	43
- Over-the-counter parts	<u>260</u>	<u>750</u>	<u>24</u>
TOTAL	<u>\$ 365</u>	<u>\$ 1,180</u>	<u>26%</u>

3. SOFTWARE SUPPORT (Grade III)

- Maintenance	*	\$ 20	NA
- Education	10	50	38
- Installation	<u>*</u>	<u>*</u>	<u>NA</u>
TOTAL	<u>\$ 10</u>	<u>\$ 70</u>	<u>48%</u>

* Negligible

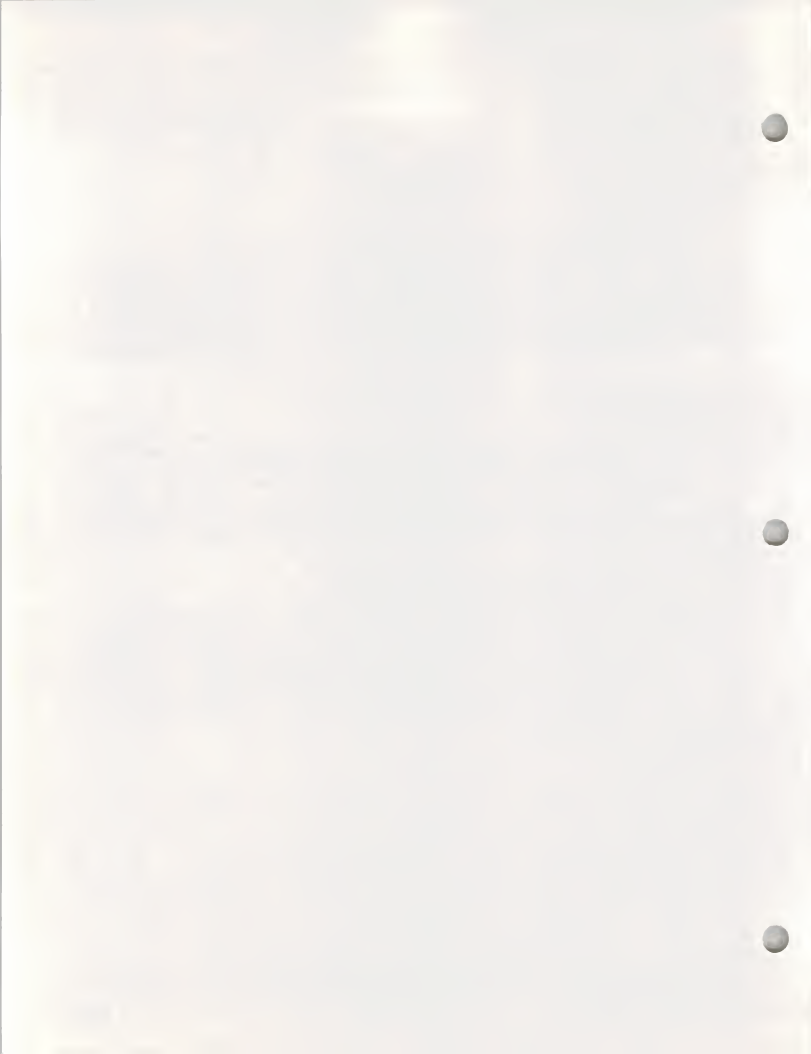


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Product Category	PERSONAL COMPUTERS (BUSINESS)		
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C. SUPPORT SERVICES REQUIREMENTS AND ISSUES

1. CURRENT
 - Hardware support services is predominantly the sale of parts, an environment that is nearly six times the size of the home computer parts business. Both maintenance and education are very small relative to the size of the hardware shipments. This is because vendors and dealers have so far concentrated on shipping hardware, not dealing with users' needs. Today's average user does not realize he needs a maintenance agreement and is not sold on the concept by the dealer. Consequently, a large proportion of users do not have an agreement.
2. FUTURE
 - There is a rapid buildup of the personal computer installed base, which represents a significant asset for many companies. On average the installations are less than 18 months old. By 1984 many of them will need regular service for on-site and off-site contract service, but this concept will need to be sold to users. Educational requirements will increase sharply as hardware offerings multiply and as LANs and other PC networking opportunities are exploited. Over-the-counter parts will also increase sharply, despite significant price erosion.
3. DECISION MAKER (USER) EXPECTATIONS
 - There are several categories of decision makers: individual professionals, administrative managers of large companies, and data processing managers. Their degree of computer literacy varies, as do their expectations. Uptime and response time are concerns of the DP manager; response time is the principal concern of the administration manager; and improved reliability is the greatest expectation of all groups. On-site service is steadily gaining as an important requirement and will be the standard business PC service requirement by 1987.



IBM SERVICES BUSINESS

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D. TECHNOLOGY ISSUES AFFECTING SUPPORT			
<ul style="list-style-type: none">• The principal technology issues affecting support are:<ul style="list-style-type: none">- Increased use of local area networks and other means of interconnection of the business PC.- Wider availability and use of large, fixed-disk storage, multiuser systems, and better quality printers.- The expected improvements in average business PC reliability, along with improved design/integration.• The significance of network use is that the business PC will become an integral part of company operations, which increases the demand for quality service. Wider use of fixed disks, multiuser systems, and better quality printers bring the business PC into the same category of service requirements as the small business system as well as introducing high-service need devices (disk, high-quality printer).• All of the above elements will mean that service will become mandatory rather than optional for the business PC, and they will necessitate the development of cheaper solutions to on-site service needs, for example:<ul style="list-style-type: none">- Fixed fee, on-site service.- User maintenance through module replacement.- "Insurance" contracts.- Multiple-user discounts.• The expected improvements in PC reliability along with enhanced design/integration will help achieve the above at prices the user can afford.			



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<p style="text-align: center;">E. ELEMENTS OF SERVICE OFFERINGS</p> <ul style="list-style-type: none">● Several levels of service will be required to satisfy the complete range of user needs:<ul style="list-style-type: none">- Repair center support for carry-in service located near user populations (will vary by vendors).- Support of an in-house specialist (designated service man from company staff, not the vendor) with simple diagnostic tools and complete on-site module/parts consignment.- Dealer support program (extension of above).- On-site vendor service:<ul style="list-style-type: none">• Time-and-materials, per-call service.• Contract service, annual contract.● The prevalent mode of service is the carry-in, per-call service (through the dealer where the product was purchased). When service is required, the cost of the first call usually exceeds the charge for an annual service contract.● An increasing proportion of the installed base is reaching the "first-failure" point, where significant repairs are necessary and the user begins to understand the cost of maintenance. A crucial element of service offering should therefore be reconditioning/checkout (leading to a regular maintenance contract or "insurance" contract).			

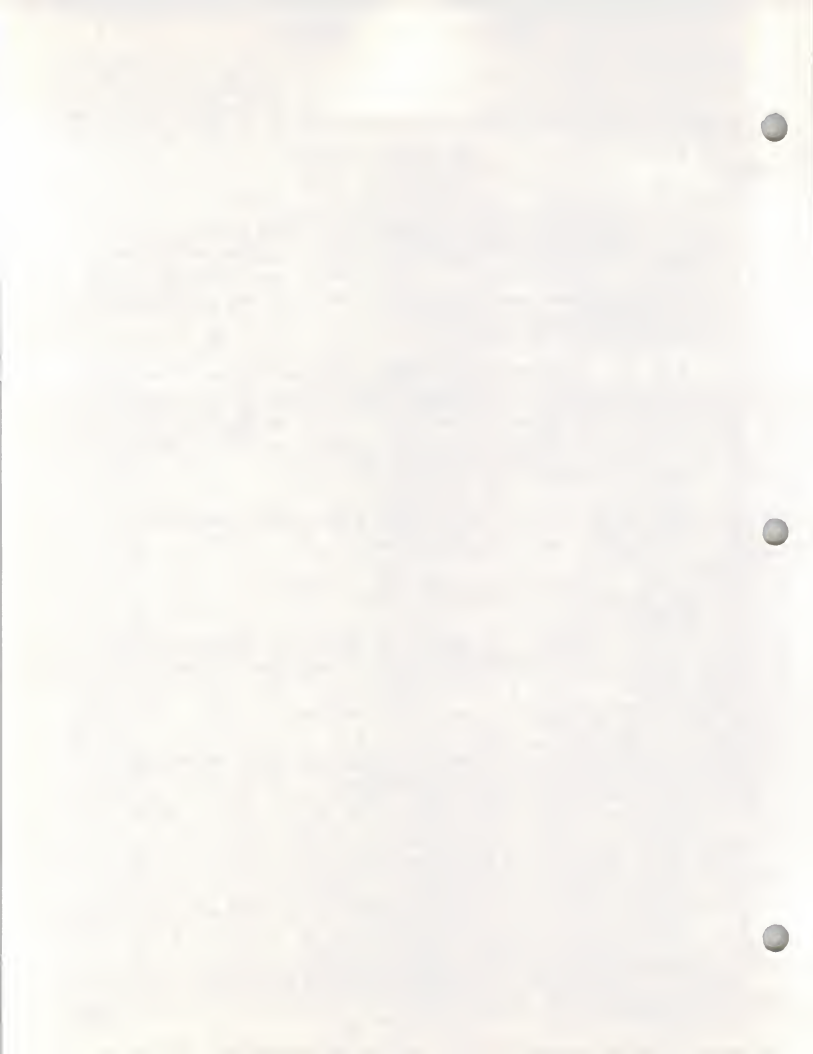


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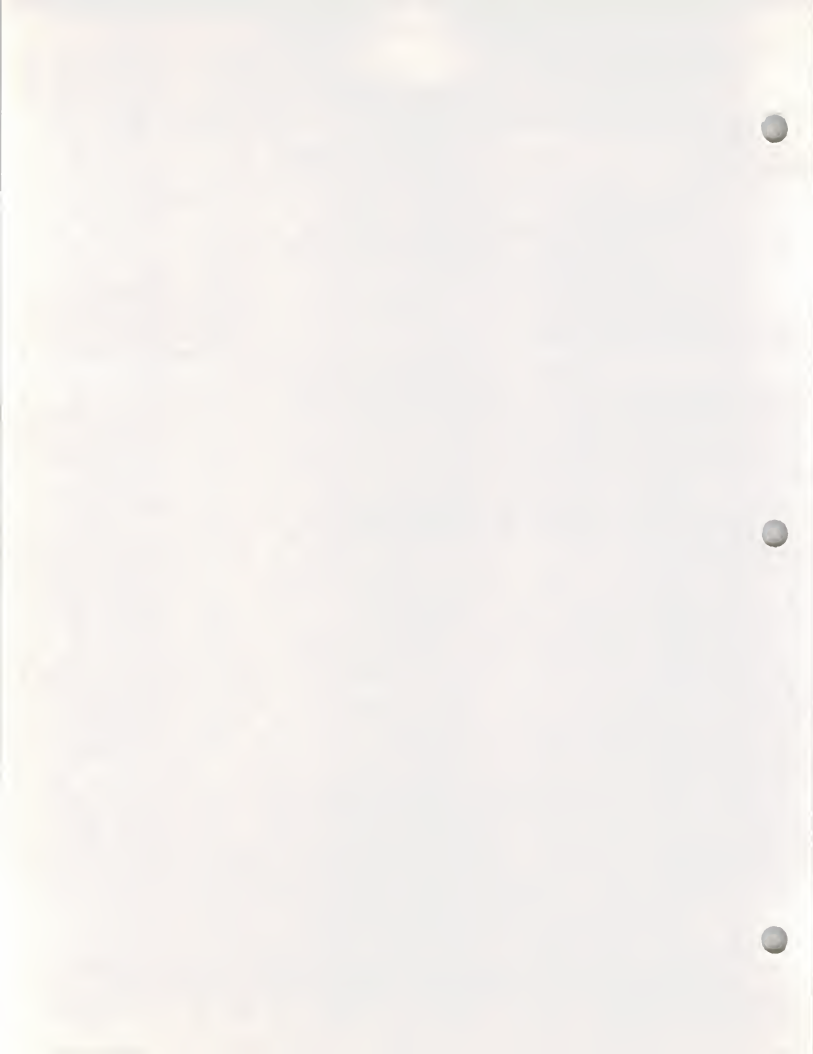
F. MARKETING PRACTICES

- An overwhelming proportion of business PC sales are done through dealers and computer retail stores. Very few of these actively sell the maintenance contract, despite the fact that business PCs are known to be fragile. A few of the computer retail stores (e.g., Businessland) insist on a complete support, training, and service package.
- While it is anticipated that product quality and reliability will increase significantly over the next two years and that many of today's poor uptime problems will be alleviated by these improvements, nevertheless business PCs need the same quality of service as do small business systems (from which they are beginning to steal revenues).
- The time will come when the maintenance contract will not be an option, i.e., where the user has a choice between:
 - Per call (T&M).
 - Service insurance (small monthly payment, guaranteeing that repair costs will not exceed a certain maximum charge - "deductible").
 - Regular (annual), on-site service contract.
- As with the sale of a small business system, the signature on the order form should include a service contract obligation.



IBM SERVICES BUSINESS

Product Category	PERSONAL COMPUTERS (BUSINESS)		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">G. MODULE CATEGORIES</p> <ul style="list-style-type: none">● Suggested module categories:<ul style="list-style-type: none">- Portable, standalone.- Portable, on-line.- Standalone, floppy-based.- Standalone, fixed-disk-based.- On-line, floppy-based.- On-line, fixed-disk-based.			



3. WORKSTATIONS

— INPUT —



IBM SERVICES BUSINESS

Product Category

WORKSTATIONS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- A workstation is a unit that integrates the functional capabilities needed for the local accomplishment of a number of application-specific tasks. The applications may range from word processing, management inquiry, and data entry to program development, graphics processing, and CAD/CAE. There is a substantial overlap between the abilities of an intelligent terminal, a personal computer, a workstation, and a small business system - the boundaries of which rely on performance and storage capacity.

2. ENVIRONMENT

- A small number of vendors have established substantial revenue sources in the workstation environment and have defined its characteristics at the same time. The environment is served by a combination of direct sales and OEM (value-added reseller) distribution channels. The OEMs differ from the PC value-added resellers by their size (e.g., Burroughs, NCR, TRW, Thomson-CSF, Rolm) and by their manufacturing capacity (which VARs for PCs do not have).

3. REVENUE (Grade II)

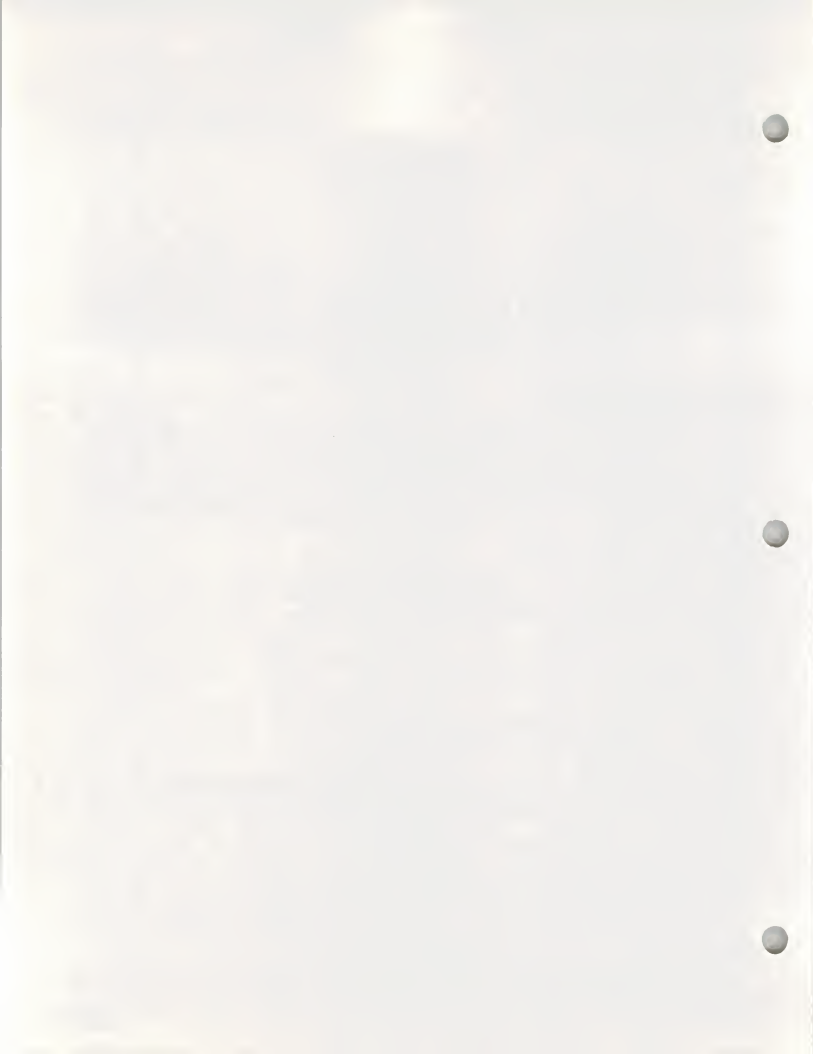
1982 (\$ millions)

- Hardware shipments	\$1,610
- Software sales	100
- After-sales support	<u>185</u>
TOTAL	<u>\$1,895</u>

4. LEADING VENDORS

Percent of 1982 User Expenditures

- Computervision	20%
- IBM	16
- Intergraph	10
- Calma	9



IBM SERVICES BUSINESS

Product Category

WORKSTATIONS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

B. REVENUES 1982-1987

1. REVENUE FORECAST (Grade II)

\$ Millions

	<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
- Hardware shipments	\$ <u>1,610</u>	\$ <u>5,980</u>	<u>30%</u>
- Software sales	<u>100</u>	<u>200</u>	<u>15</u>
- After-sales support	<u>185</u>	<u>695</u>	<u>30</u>
TOTAL	\$ <u>1,895</u>	\$ <u>6,605</u>	<u>28%</u>

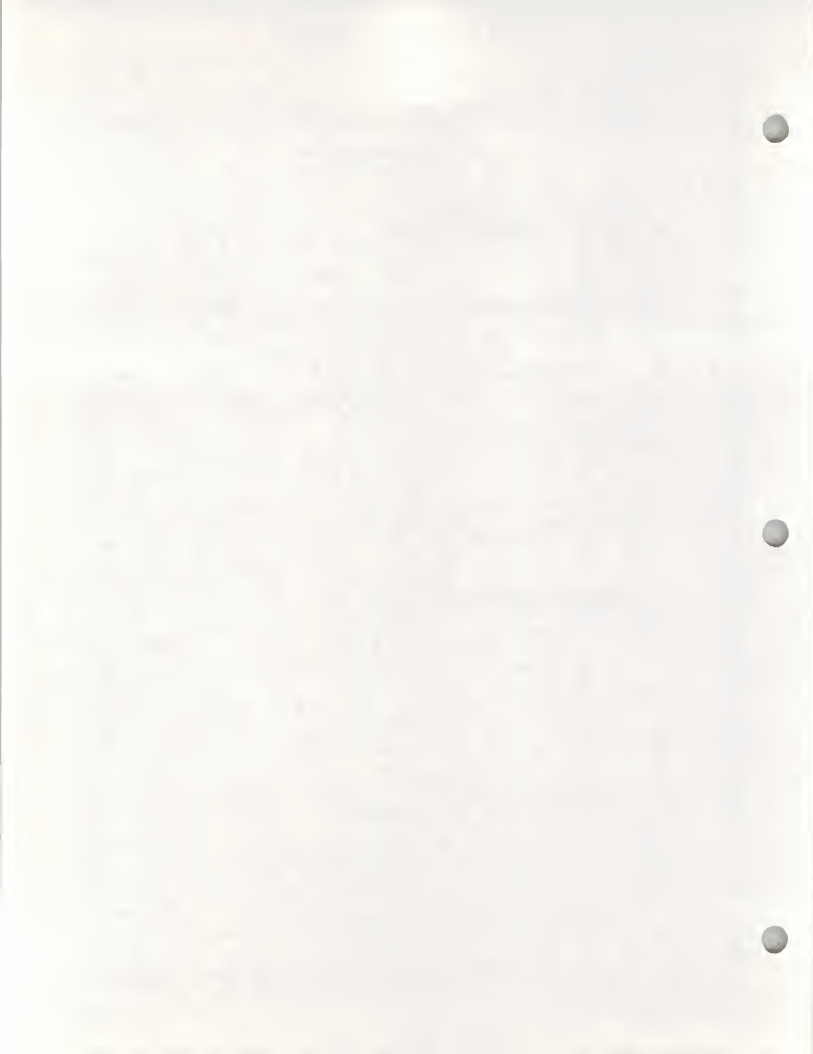
2. HARDWARE SUPPORT (Grade III)

- Maintenance	\$ <u>135</u>	\$ <u>500</u>	<u>30%</u>
- Education	<u>*</u>	<u>*</u>	<u>*</u>
- Over-the-counter parts	<u>40</u>	<u>140</u>	<u>28</u>
TOTAL	\$ <u>175</u>	\$ <u>640</u>	<u>29%</u>

3. SOFTWARE SUPPORT (Grade III)

- Maintenance	\$ <u>10</u>	\$ <u>45</u>	<u>35%</u>
- Education	<u>*</u>	<u>5</u>	<u>NA</u>
- Installation	<u>*</u>	<u>5</u>	<u>NA</u>
TOTAL	\$ <u>10</u>	\$ <u>55</u>	<u>41%</u>

* Negligible



IBM SERVICES BUSINESS

Product Category

WORKSTATIONS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

C. SUPPORT SERVICES REQUIREMENTS AND ISSUES

1. CURRENT

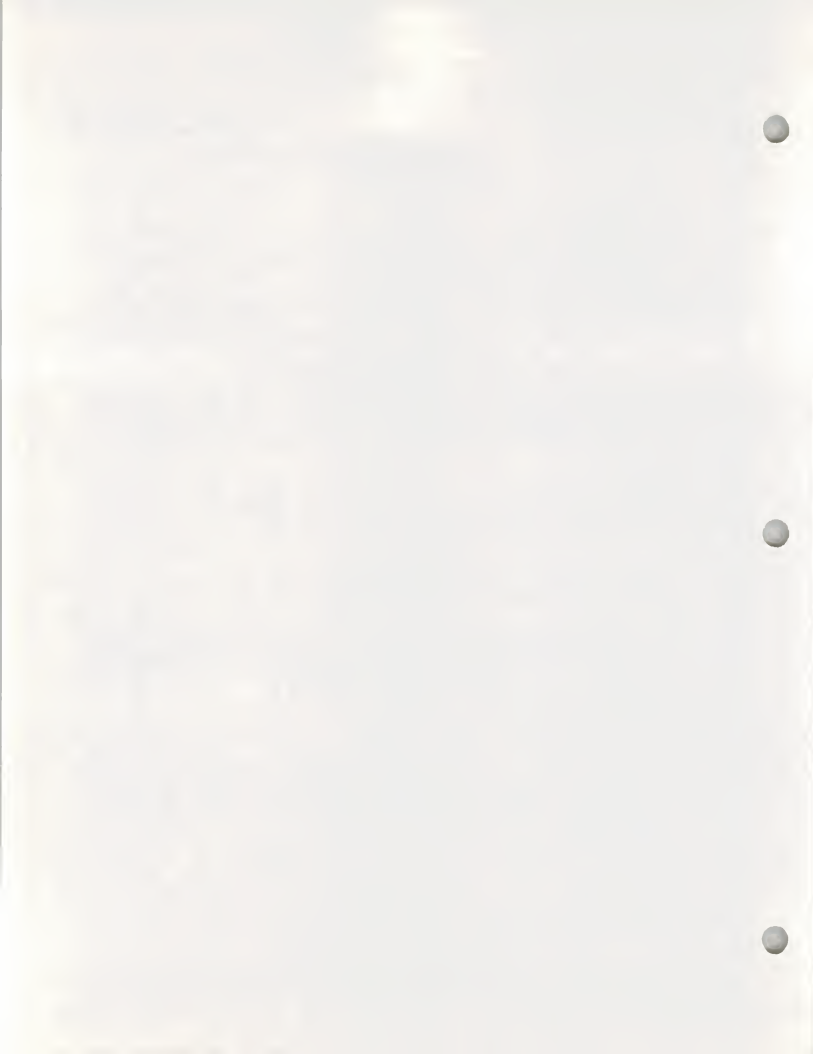
- Workstation hardware support services have been growing steadily as an environment, in line with:
 - The growing dependence of workstations on networking capabilities.
 - The growth of the requirement for workstation units.
 - The advancing age of part of the CAD/CAM installed base.
- This growth has meant steady increases in both maintenance services and over-the-counter parts sales (due to the heavy reliance of some workstation vendors on value-added resellers).

2. FUTURE

- The new workstation products that are emerging integrate several functions:
 - Personal computer.
 - Telephone handset and function keys.
 - Data, text, graphics, and voice integrator.
- An example of these advanced stations is the SYDIS voice station. This means that the service requirements for future products will include a combination of skills that the current field engineer workforce does not have (knowledge of voice circuits, networks, and integrated applications).

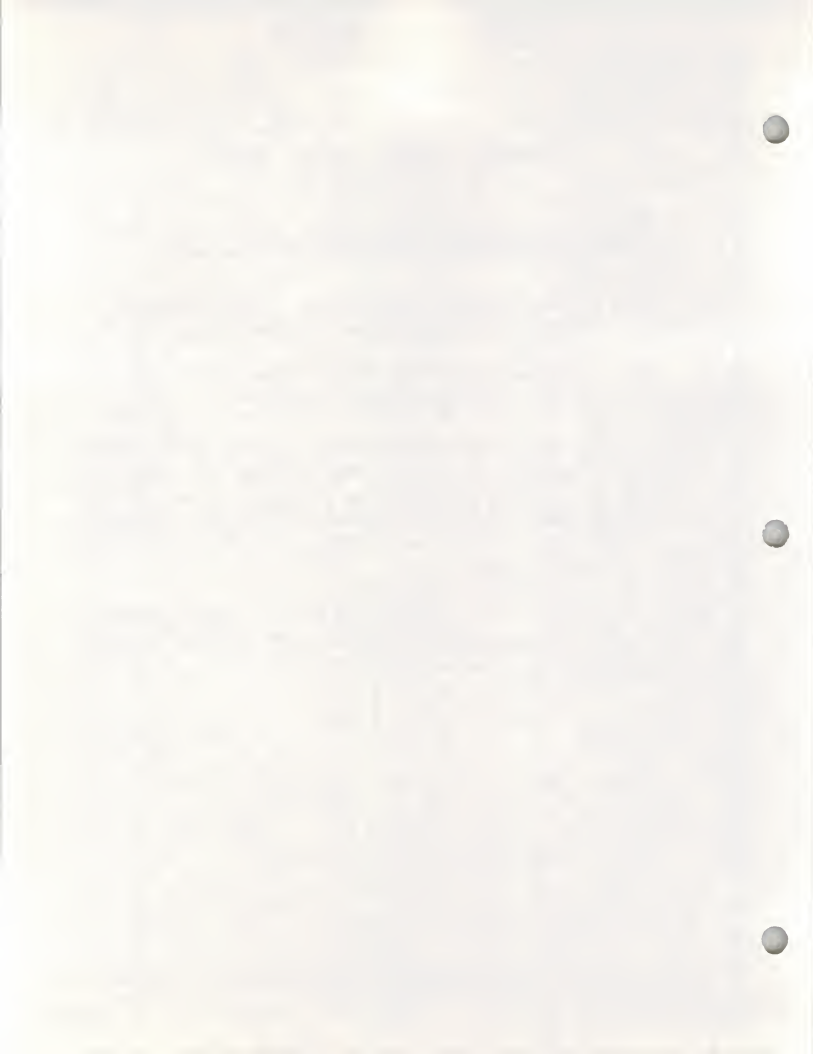
3. DECISION MAKER EXPECTATIONS

- The end user will increasingly depend on the vendor or the value-added reseller to design his network of workstations, to plan loads, and to configure the right combination of local compute power, storage and functions, node by node. The field engineer is well suited for this role, in the eyes of the user, even though in reality it would be difficult for most FEs to perform all these roles today.



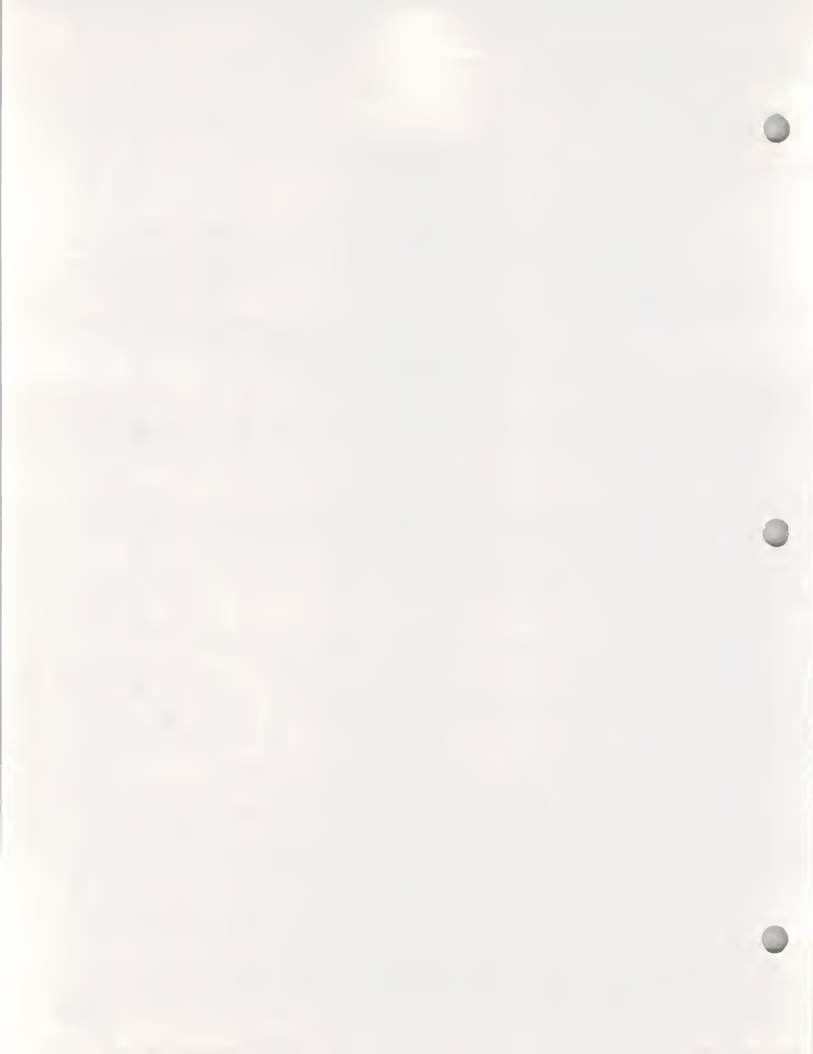
IBM SERVICES BUSINESS

Product Category	WORKSTATIONS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p>D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">• The main technology issues facing the workstation environment that will affect support services have been covered in section C, namely:<ul style="list-style-type: none">- Increased use of networks, clustering, and intercommunication of workstations in tomorrow's business environment.- Increased level of functional integration of each station, particularly the integration of text, data, voice, and graphics.• These developments mean that the workstation will become a difficult product to maintain, requiring fast, multidisciplinary service support capabilities. The relatively high price of these stations (low end at \$6,500 per user, high end at \$30,000 per user), will place the workstation above the PC and intelligent terminal in service revenue per station, and will put it closer to the small business system.• Service demands (in terms of response time and repair time) will be the same as for the small business system, since the loss of a workstation will mean that a highly paid professional is inactive.			



IBM SERVICES BUSINESS

Product Category	WORKSTATIONS		
Last Updated: <u>October 11, 1983</u>	Source: INPUT	Contact G. Kemp	
<p style="text-align: center;">E. ELEMENTS OF SERVICE OFFERINGS</p> <ul style="list-style-type: none">• The principal service requirement is for system support (for hardware, system software, <u>and</u> application software) that is responsive to the business needs that the workstation serves. This varies from one vertical market to another.• The CAD/CAE workstation support requirement is well known but poorly served (see INPUT's <u>Analysis of User Requirements for Small-scale Systems</u>, August 1983). The response level must be raised.• The workstations sold through OEMs do not receive true systems support (as defined above), merely the standard hardware and system software maintenance.• The definition of what each vertical revenue source requires is beyond the scope of this report and depends on the business needs served.			



IBM SERVICES BUSINESS

Product Category

WORKSTATIONS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

F. MARKETING PRACTICES

1. OVERVIEW

- The current workstation environment is divided into:
 - Those stations already targeted for vertical revenue sources (e.g., CAD/CAE).
 - Those stations that are currently only targeted at general function environments (e.g., distributed data processing).
- Vertically targeted workstations are generally sold by direct sales methods, and nontargeted workstations are generally sold through OEMs. As more and more of the new release products are functionally customized to meet specific vertical revenue source needs, the role of direct sales will increase.

2. DISTRIBUTION CHANNELS

Hardware Unit Sales
Percent by Value

	<u>Direct</u>	<u>OEM</u>
- CAD/CAE	80%	*
- Non-CAD/CAE	<u>5</u>	<u>15</u>
TOTAL	<u>85%</u>	<u>15%</u>

3. PRICING/DISCOUNTING

- Discounting is volume related and is at a level compatible with industry standards for small business systems. Functionality is stressed rather than price.

* Negligible



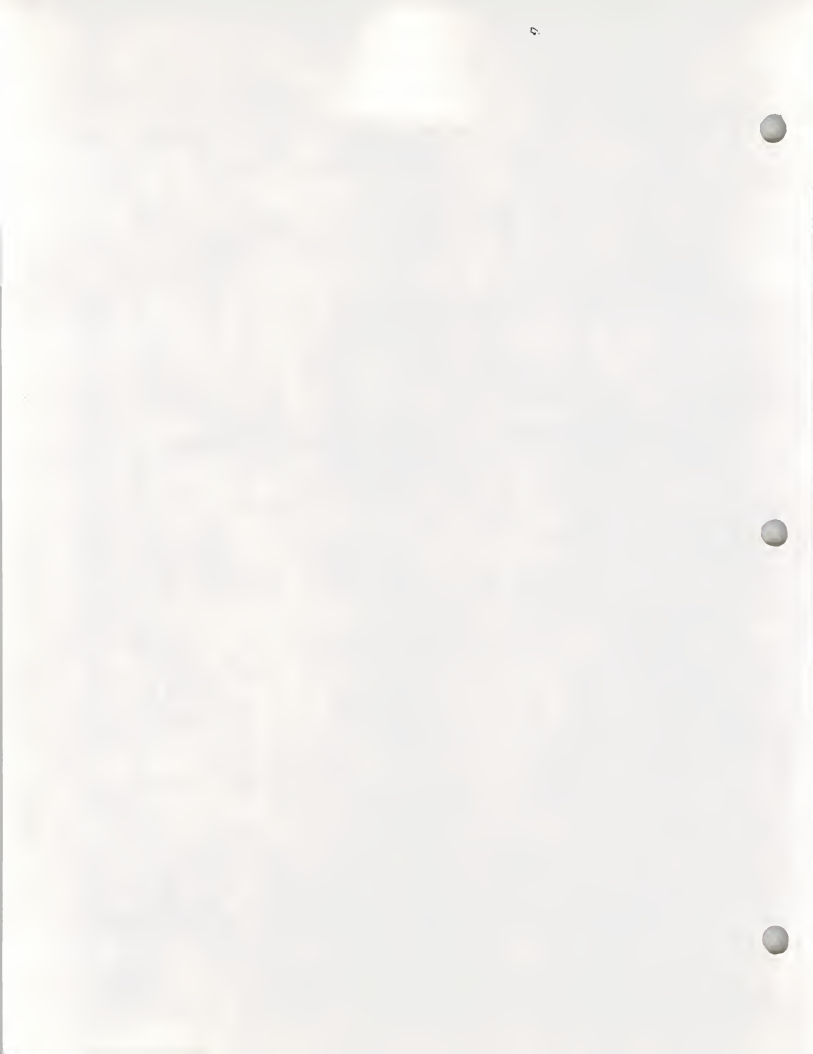
IBM SERVICES BUSINESS

Product Category	WORKSTATIONS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
G. MODULE CATEGORIES			
<ul style="list-style-type: none">• The following are the suggested module categories. They are all essentially application oriented, function oriented, or targeted for occupations.<ul style="list-style-type: none">- Executive workstations.- Programmer workstation.- Phone stations (voice station).- Information stations.- CAD/CAE.- Industry-specific stations (e.g., legal workstation).			



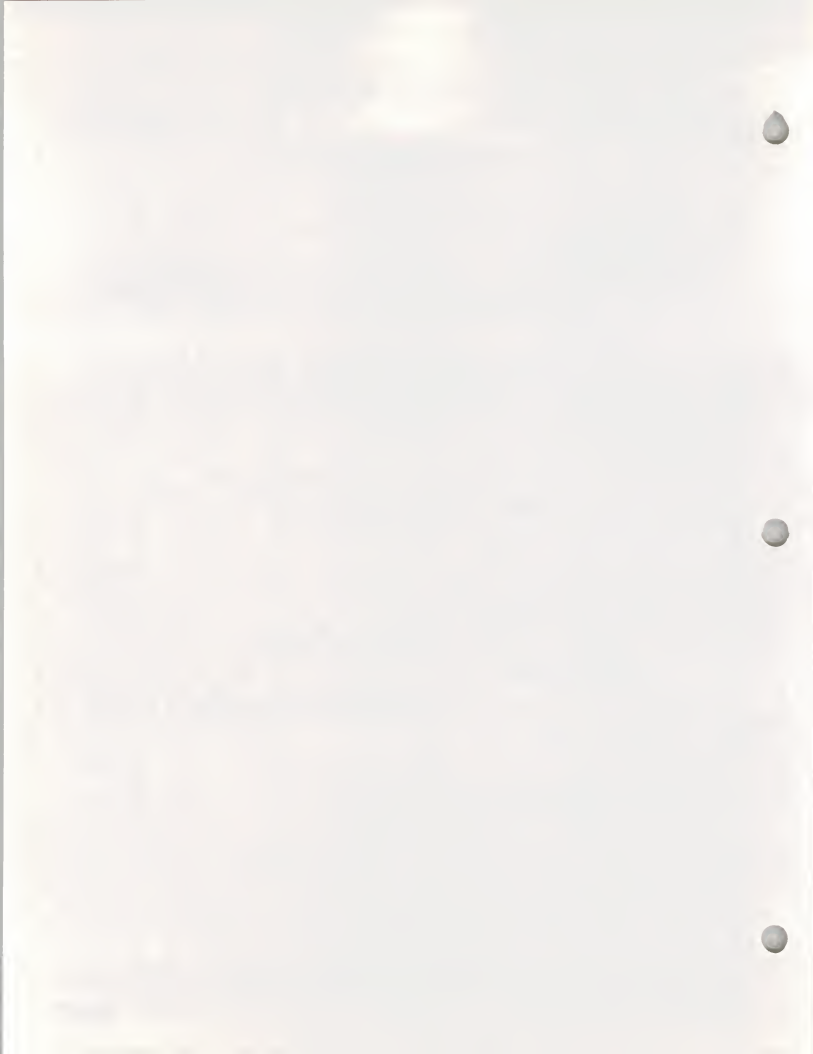
4. OTHER SYSTEMS UNDER \$25,000

— INPUT —



IBM SERVICES BUSINESS

Product Category	OTHER SYSTEMS UNDER \$25,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
A. ENVIRONMENT OVERVIEW			
1. <u>DEFINITION</u>			
• This category includes small business systems, the so-called micro minicomputers (naked hardware, sometimes in kit or board form, sold to value-added resellers and hardware integration houses), and the traditional minicomputer.			
2. <u>ENVIRONMENT</u>			
• Approximately 60% of these products are sold directly to the end user and 40% to the VAR community. Price and function competition have been intense since the arrival of the microcomputer, which is gradually doing to the mini what the mini did to the small business system.			
3. <u>REVENUE</u> (Grade II)			
		<u>1982 (\$ millions)</u>	
-	SBS shipments	\$ 2,585	
-	Mini shipments	5,580	
-	Software sales	1,630	
-	After-sales support	<u>1,705</u>	
	TOTAL	<u>\$ 11,500</u>	
4. <u>LEADING VENDORS</u>			
		<u>Percent of 1982 User Expenditures</u>	
-	IBM	26%	
-	DEC	22	
-	Burroughs	18	
-	NCR	14	



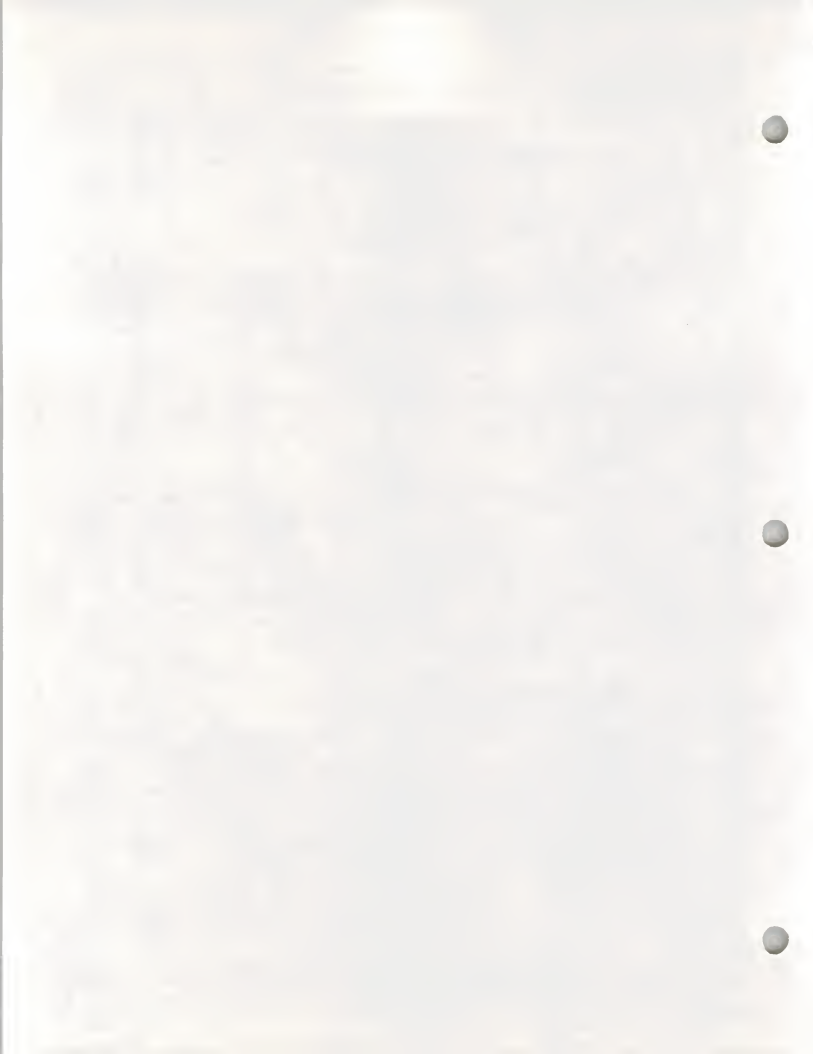
IBM SERVICES BUSINESS

Product Category		OTHER SYSTEMS UNDER \$25,000		
Last Updated: <u>October 11, 1983</u>		Source: <u>INPUT</u>		Contact <u>G. Kemp</u>
B. REVENUES 1982-1987				
1.	<u>REVENUE FORECAST</u> (Grade II)	<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
-	Small business system shipments	\$ 2,585	\$ 6,990	22%
-	Minicomputer system shipments	5,580	17,000	25
-	Software sales	1,630	6,000	30
-	After-sales support	<u>1,705</u>	<u>4,970</u>	<u>18</u>
	TOTAL	<u>\$ 11,500</u>	<u>\$ 34,960</u>	<u>25%</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 1,220	\$ 3,400	23%
-	Education	25	75	25
-	Over-the-counter parts	<u>230</u>	<u>700</u>	<u>25</u>
	TOTAL	<u>\$ 1,475</u>	<u>\$ 4,175</u>	<u>23%</u>
3.	<u>SOFTWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 215	\$ 740	28%
-	Education	*	*	NA
-	Installation	<u>15</u>	<u>55</u>	<u>30</u>
	TOTAL	<u>\$ 230</u>	<u>\$ 795</u>	<u>28%</u>
*	Negligible			



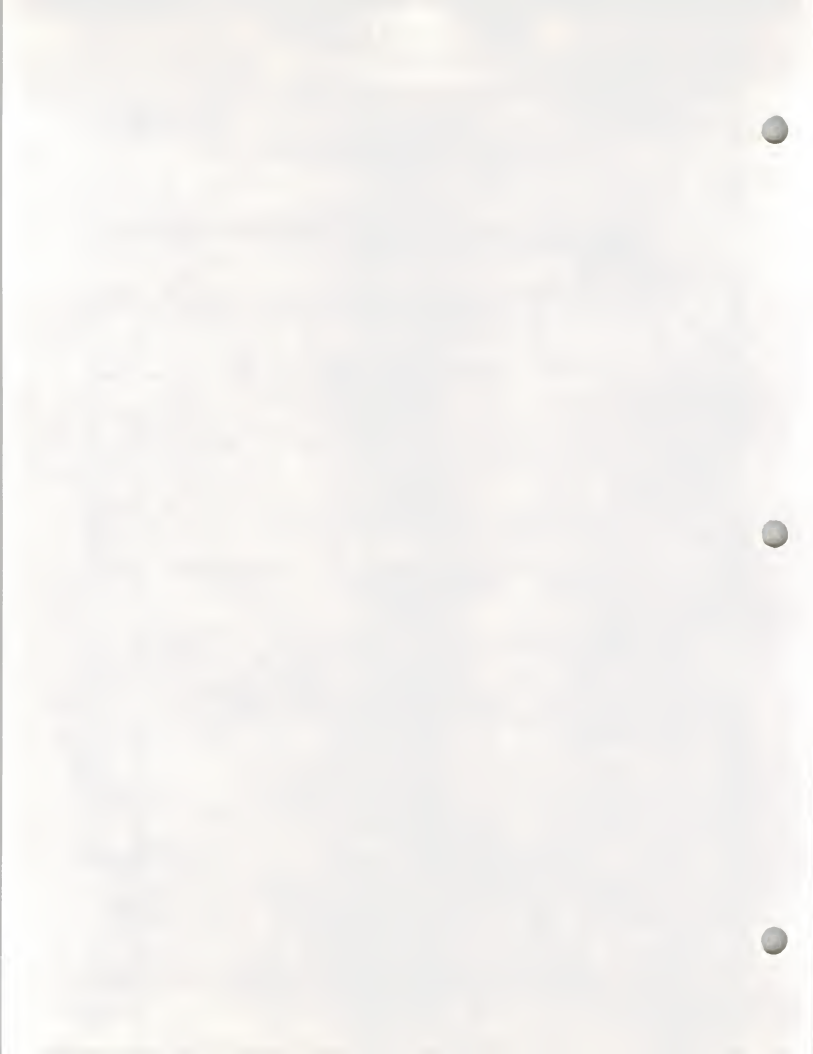
IBM SERVICES BUSINESS

Product Category	OTHER SYSTEMS UNDER \$25,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p>C. SUPPORT SERVICES REQUIREMENTS AND ISSUES</p> <p>I. <u>CURRENT</u></p> <ul style="list-style-type: none">Both hardware and software maintenance are significant revenue sources in size and growth rate. Each year hardware maintenance revenue grows by nearly \$300 million even though service prices have been practically frozen. Software maintenance is the fastest growing environment and is not subject to users' resistance to price changes. Over-the-counter parts is a healthy business with substantial margins (typically 40% to 60%). <p>2. <u>FUTURE</u></p> <ul style="list-style-type: none">Small-system reliability will improve steadily over the next five years due to enhanced product quality control, increased integration, and peripheral sub-system improvements. This will reduce the maintenance service workload at a time when service prices will also be reduced. It is likely that this will maintain service margins. Increased use of network links will make the use of remote diagnostics more widely applicable, but the on-site FE visit will remain the norm for fault repair. <p>3. <u>DECISION MAKER EXPECTATIONS</u></p> <ul style="list-style-type: none">Software maintenance, documentation, hardware maintenance, and supplies sales are all areas of concern to the current user base, with vendor service quality below user expectations. (INPUT's <u>Analysis of User Requirements For Small-scale Systems</u>, August 1983, analyzes these areas.) Response times for hardware failures are generally adequate, whereas response times for software failures are generally inadequate.			



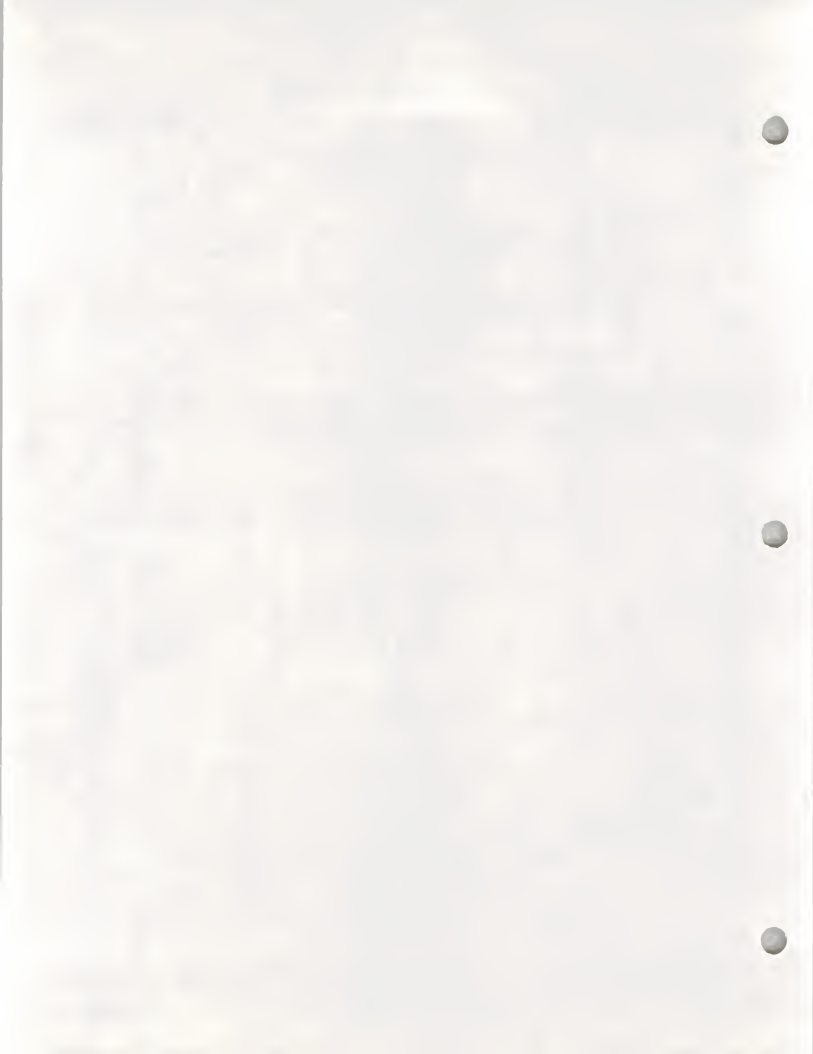
IBM SERVICES BUSINESS

Product Category	OTHER SYSTEMS UNDER \$25,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">● Several technology developments will affect support of the less-than-\$25,000 systems over the next five years:<ul style="list-style-type: none">- The 32-bit processor will capture 30% of the CPU shipments of the SBS and minicomputer ranges.- Network connect and local area network capabilities will be increasingly used.- Higher quality peripherals will improve the overall reliability of the systems.- Software in firmware will be increasingly used.- Distributed processing concepts will continue to be adopted, whereby data as well as processing capabilities will be dispersed.● The support strategies (and methodologies/tools) necessary to meet the user requirements created by the above developments will need to be in place by early 1984 to allow for the long lead time in converting organizational structures, personnel skill mix, and training/documentation tools that will be necessary.			



IBM SERVICES BUSINESS

Product Category	OTHER SYSTEMS UNDER \$25,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">E. ELEMENTS OF SERVICE OFFERINGS</p> <ul style="list-style-type: none">• The basic service offering will be the annual contract on-site service associated with the usual options of extra-shift coverage and on-call service.• It is possible that some components of the small-business-system base could be serviced under a carry-in/ship-in service, particularly terminals, printers, and low-end processors.• The demand for naked hardware components to hardware integration houses will grow substantially, supplemented by the appearance of software chips for standard system and applicational functions.• Service guarantees, along with the added revenues that they generate, will play a significant role in the upgrading of service to this category of equipment.			



IBM SERVICES BUSINESS

Product Category	OTHER SYSTEMS UNDER \$25,000		
Last Updated: <u>October 11, 1983</u>		Source: <u>INPUT</u>	Contact <u>G. Kemp</u>
F. MARKETING PRACTICES			
<p>1. <u>OVERVIEW</u></p> <ul style="list-style-type: none">● This category of products is marketed in four different ways (see below) in an increasingly competitive field. These products compete with:<ul style="list-style-type: none">- Very intelligent (so-called "brilliant") terminals.- The new breed of workstation (e.g., Apollo, Convergent Technology).- The high end of the microcomputer range (e.g., the multistation 16-bit, hard-disk-based system at \$10,000).			
<p>2. <u>DISTRIBUTION CHANNELS</u></p> <ul style="list-style-type: none">● The four main categories are:<ul style="list-style-type: none">- Software value-added resellers.- Hardware value-added resellers.- Computer stores.- Direct sales.			
<p>3. <u>PRICING AND DISCOUNTING</u></p> <ul style="list-style-type: none">● Competition and technology developments have been equally responsible for a continuous erosion of prices in this category. Discounting is volume related and not a major factor in small business systems but is a major factor in naked hardware and minicomputer sales.			



IBM SERVICES BUSINESS

Product Category

OTHER SYSTEMS UNDER \$25,000

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

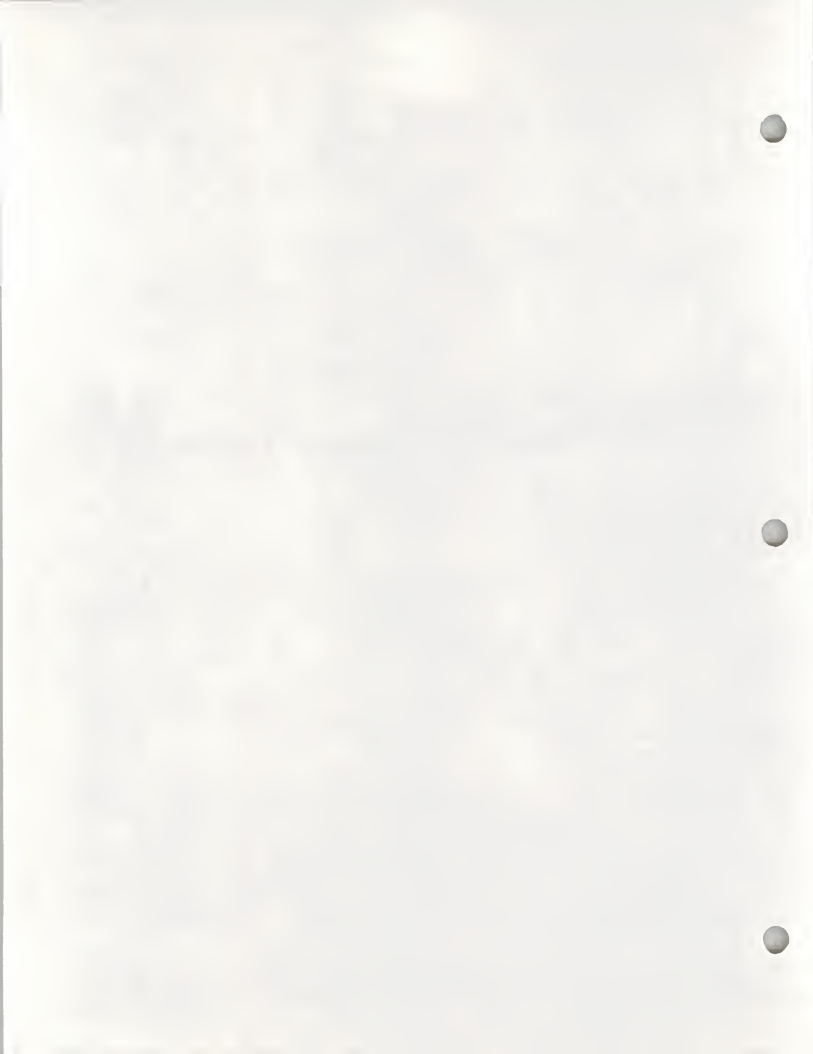
G. MODULE CATEGORIES

- Suggested module categories:
 - Minicomputer components.
 - 16-bit minicomputer systems.
 - 32-bit minicomputer systems.
 - Industrial automation systems.
 - Small business systems.



5. SYSTEMS BETWEEN \$25,000 & \$350,000

— INPUT —



IBM SERVICES BUSINESS

Product Category

SYSTEMS BETWEEN \$25,000 & \$350,000

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- This category includes large standalone business systems (e.g., System/38), distributed processing systems (e.g., 8100 series), and small-to-medium main-frame products (up to the equivalent of the IBM 4321 and 4331 but excluding the 4341). The revenue values contained in this section include the peripherals and terminals attached to the system but exclude data communications equipment.

2. REVENUE (Grade II)

1982 (\$ millions)

- Hardware shipments	\$3,650
- Software sales	450
- After-sales support	<u>510</u>
TOTAL	<u>\$4,610</u>

3. LEADING VENDORS

Percent of 1982 User Expenditures

- IBM	38%
- Burroughs	13
- DEC	12
- Honeywell	11



IBM SERVICES BUSINESS

Product Category

SYSTEMS BETWEEN \$25,000 & \$350,000

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

B. REVENUES 1982-1987

1. REVENUE FORECAST (Grade II)

\$ Millions

	<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
- Hardware shipments	\$ 3,650	\$ 10,875	26%
- Software sales	450	1,550	28
- After-sales support	<u>650</u>	<u>1,455</u>	<u>18</u>
TOTAL	<u>\$ 4,750</u>	<u>\$ 13,880</u>	<u>24%</u>

2. HARDWARE SUPPORT (Grade III)

- Maintenance	\$ 480	\$ 965	15%
- Education	15	34	18
- Over-the-counter parts	<u>46</u>	<u>86</u>	<u>13</u>
TOTAL	<u>\$ 541</u>	<u>\$ 1,085</u>	<u>15%</u>

3. SOFTWARE SUPPORT (Grade III)

- Maintenance	\$ 90	\$ 310	28%
- Education	15	45	25
- Installation	<u>4</u>	<u>15</u>	<u>30</u>
TOTAL	<u>\$ 109</u>	<u>\$ 370</u>	<u>28%</u>



IBM SERVICES BUSINESS

Product Category

SYSTEMS BETWEEN \$25,000 & \$350,000

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

C. SUPPORT SERVICES REQUIREMENTS AND ISSUES

1. CURRENT

- Most of the service revenue is generated by hardware maintenance, which is increasingly under user pressure to limit price increases. User expectations as to response time and product reliability meanwhile continue to grow, which produces cost pressures on the vendor. Over-the-counter parts has been a small environment because most systems in this category are sold by direct sales and supported under annual contracts. This is changing, however.

2. FUTURE

- There is a growing tendency to sell these systems through value-added resellers (primarily software companies who have applicational capabilities in vertical markets). These tend to be large corporations such as COMPUTER-VISION, ANACOMP, etc. This will probably mean that more service contracts will be let to those VARs by end users since the VAR will have client control. Spare parts sales should therefore rise marginally in volume, but drop in dollar value as prices continue to fall.

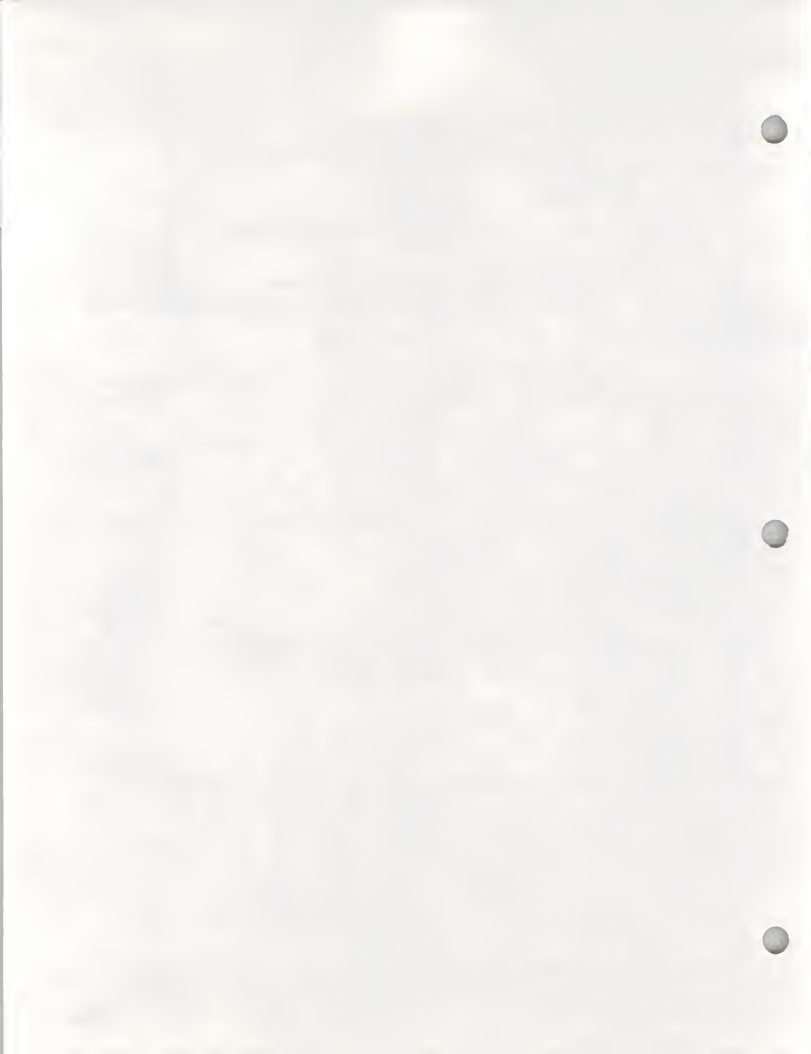
3. DECISION MAKER EXPECTATIONS

- Software support, ongoing training, and documentation are not adequate for the average user of this category of equipment, although hardware maintenance is generally sufficient for most users' needs. The key to user satisfaction is responsiveness at the system level (i.e., hardware, system software and, if appropriate, application software).



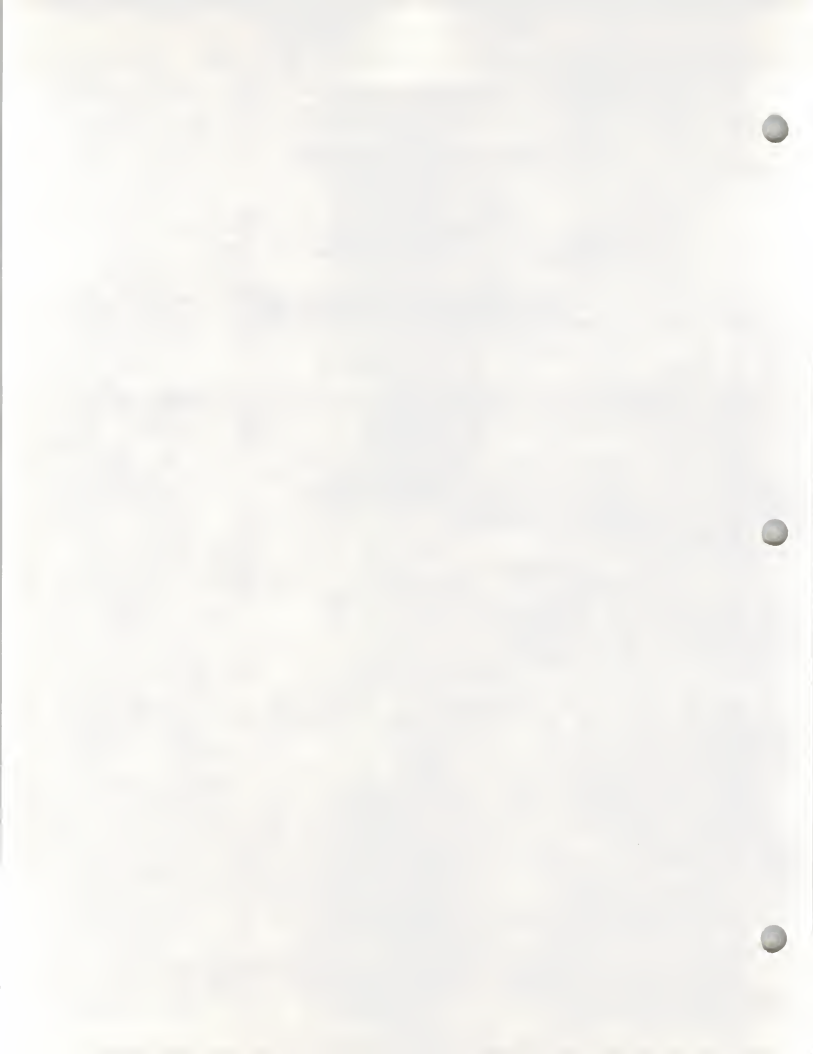
IBM SERVICES BUSINESS

Product Category	SYSTEMS BETWEEN \$25,000 & \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p>D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">• The main developments affecting support over the next five years are:<ul style="list-style-type: none">- The possible introduction of optical storage devices (which, after a long period of gestation and development, are about to become economically viable).- The integration of storage capabilities with central processor functions (as a unit).- The integration of local area network handling capabilities with external (remote) network capabilities.- The overall improvement in product reliability expected (approximately 10% of current values).• The first three developments require changes in the skill mix of field service engineers; the fourth development, if accomplished, will enhance the profitability of field service operations and offset margin squeezes brought on by user pressure to restrict service price increases.			



IBM SERVICES BUSINESS

Product Category	SYSTEMS BETWEEN \$25,000 & \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">E. ELEMENTS OF SERVICE OFFERINGS</p> <ul style="list-style-type: none">• Consistent with the growing role of VAR in the servicing of this category of equipment, the following service offerings should be planned:<ul style="list-style-type: none">- Distributor service support (training, documentation, spares ordering/ fulfillment, consignment program, backup support, hotline support center, etc.).- Standalone contract offerings (annual contract with automatic renewal, standard shift options, per call options, etc.).• Consistent with the emerging need for specialist service (see INPUT's <u>Analysis of User Requirements for Small-scale Systems</u>, August 1983) the following options should be considered:<ul style="list-style-type: none">- Guaranteed uptime.- Guaranteed response time.- Variable shift coverage.- Off-hours PM service.			



IBM SERVICES BUSINESS

Product Category

SYSTEMS BETWEEN \$25,000 & \$350,000

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

F. MARKETING PRACTICES

1. OVERVIEW

- The sales of the small- and medium-sized general-purpose computer have always been through direct sales channels, with the tight account control that follows that practice. The introduction of the large minicomputer into this market category has brought with it the practice of using VARs, which is gradually being applied to a larger percentage of the shipments each year. The mainframe vendors are also adopting this approach, which will accelerate the trend.

2. DISTRIBUTION CHANNELS

- The following approximate percentages illustrate the expected impact of the trend toward VAR channels of distribution:

	<u>1982</u>	<u>1987</u>
- Direct sales	87%	72%
- VARS	13	28

3. PRICING AND DISCOUNTING

- There is little discounting applied to individual sales, but the usual volume discounts for multiple unit sales of a given product, particularly in distributed processing systems.
- Pricing is technology-driven and has seen relatively little erosion due to competition. The standard practice of discounting the sales price to encourage rent-to-sale conversions prior to replacement model introduction has become a widespread practice.



IBM SERVICES BUSINESS

Product Category	SYSTEMS BETWEEN \$25,000 & \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
G. MODULE CATEGORIES			
<ul style="list-style-type: none">• Suggested module categories:<ul style="list-style-type: none">- Distributed processing systems (e.g., 8100).- General purpose category 1 (e.g., System/38).- General purpose category 2 (e.g., 4321).- General purpose category 3 (e.g., 4331).			



6. SYSTEMS OVER \$350,000

INPUT



IBM SERVICES BUSINESS

Product Category	SYSTEMS OVER \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- This category includes all of the mainframe products that are larger or equal to the IBM 4341 in functional capabilities, memory size, or processing capacity. Super computers such as the Cray 1, multiprocessor configurations, and super minicomputers such as the DEC 20 are also included. The market values contained in this section include the peripherals and terminals attached to the system but exclude data communications equipment (see Section 12).

2. REVENUE (Grade II)

	<u>1982 (\$ millions)</u>
- Hardware shipments	\$4,320
- Software sales	648
- After-sales support	<u>2,296</u>
TOTAL	<u>\$7,264</u>

3. LEADING VENDORS

	<u>Percent of 1982 User Expenditures</u>
- IBM	45%
- Honeywell	12
- Burroughs	10
- DEC	9



IBM SERVICES BUSINESS

Product Category		SYSTEMS OVER \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT		Contact G. Kemp
B. REVENUES 1982-1987				
1.	<u>REVENUE FORECAST</u> (Grade II)	<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
-	Hardware shipments	\$ 4,320	\$ 8,690	15%
-	Software sales	648	1,900	24
-	After-sales support	<u>2,296</u>	<u>5,250</u>	<u>18</u>
	TOTAL	<u>\$ 7,264</u>	<u>\$ 15,840</u>	<u>17%</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 1,839	\$ 4,090	17%
-	Education	54	125	18
-	Over-the-counter parts	<u>58</u>	<u>105</u>	<u>13</u>
	TOTAL	<u>\$ 1,951</u>	<u>\$ 4,320</u>	<u>17%</u>
3.	<u>SOFTWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 281	\$ 735	21%
-	Education	47	143	25
-	Installation	<u>17</u>	<u>52</u>	<u>25</u>
	TOTAL	<u>\$ 345</u>	<u>\$ 930</u>	<u>22%</u>



IBM SERVICES BUSINESS

Product Category	SYSTEMS OVER \$350,000		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp
C. SUPPORT SERVICES REQUIREMENTS AND ISSUES			
1. <u>CURRENT</u>			
<ul style="list-style-type: none">In this large-system product category, the support service requirements are changing rapidly. Currently the spectrum of services offered by the vendors' field service organizations is limited to hardware maintenance, system software maintenance, and environmental/physical layout planning. Response time requirements are now below an hour at the top end of the product line and are decreasing steadily. System MTBF is increasing on average at approximately 10% per annum for new product introductions.			
2. <u>FUTURE</u>			
<ul style="list-style-type: none">It seems inevitable that the responsibility of the field service organization will be expanded to include many of the post-sale support activities that are now part of the sales support and marketing support groups. These would include, but not necessarily be limited to, consulting, add-on sales, upgrade sales, training, documentation, and supplies sales. This will mean a clearer definition of the pre- and post-sale responsibilities and a narrower focusing of manpower resources in both sales and service. However, this is likely to be a long drawn-out process because of internal resistance to such moves.			
3. <u>DECISION MAKER EXPECTATIONS</u>			
<ul style="list-style-type: none">Users are highly motivated to improve their system availability, either through hardware purchase or through the purchase of service options that accomplish the same objective. These might include guaranteed uptime, response time, and repair time. The propensity of users to pay for such services is directly related to the value of the data processed by the equipment: if it is highly sensitive and/or rapidly decaying (i.e., time-sensitive data) then the acceptance of these service options will be all the greater.			



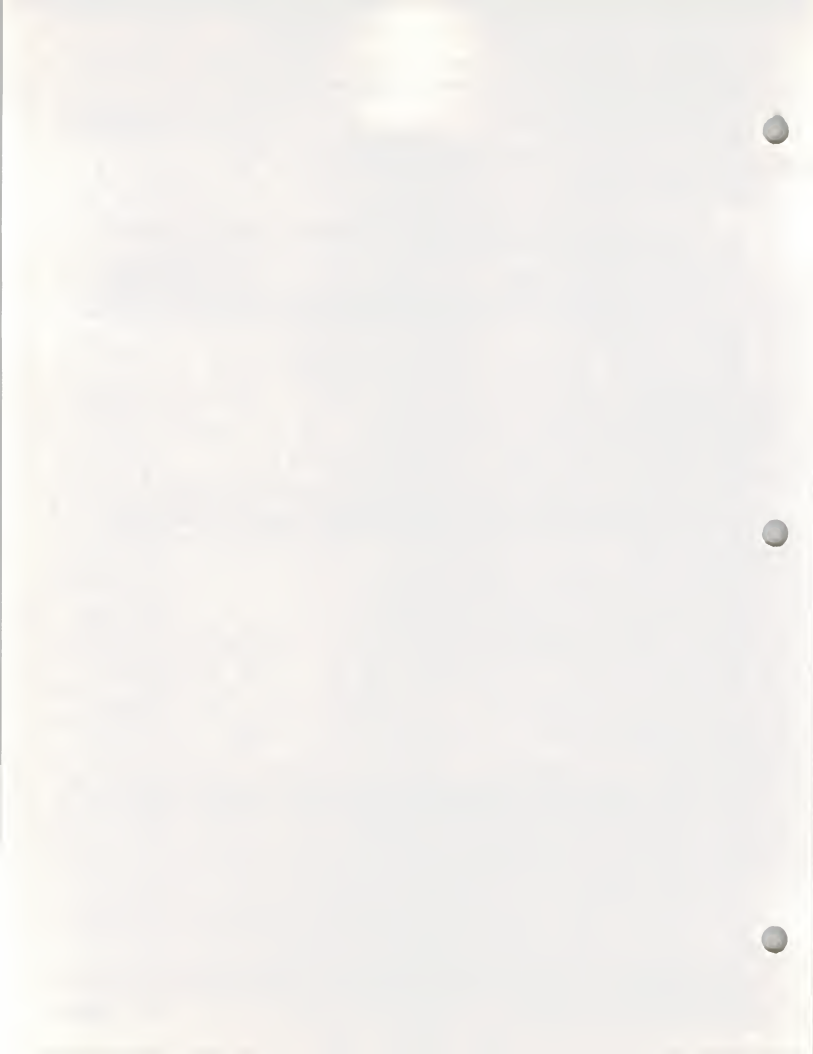
IBM SERVICES BUSINESS

Product Category	SYSTEMS OVER \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
D. TECHNOLOGY ISSUES AFFECTING SUPPORT			
<ul style="list-style-type: none">• The principal developments affecting support can be grouped into three categories:<ul style="list-style-type: none">- Integration of storage capabilities with central processor units.- The continued expansion of the average system configuration (which affects the system MTBF as a whole).- The trend toward integration of hardware functionality into software/firmware.• In addition, the network handling capabilities of the average large system will need to accomodate the pass-through link of local area network connected devices, which will begin to multiply in ever-increasing numbers. If they are not handled on a pass-through basis, the impact on available processor cycles could be dramatic.• These issues affect the skill mix needed by the average field engineer as well as the overall system reliability/availability, which is the key factor used by customers to measure their satisfaction with vendor field service organizations.• Finally, optical storage devices are likely to make their appearance on the market, starting at the top end of the product category and progressing downward. Whatever teething problems are encountered with the introduction of these devices will be felt in this product category first.			



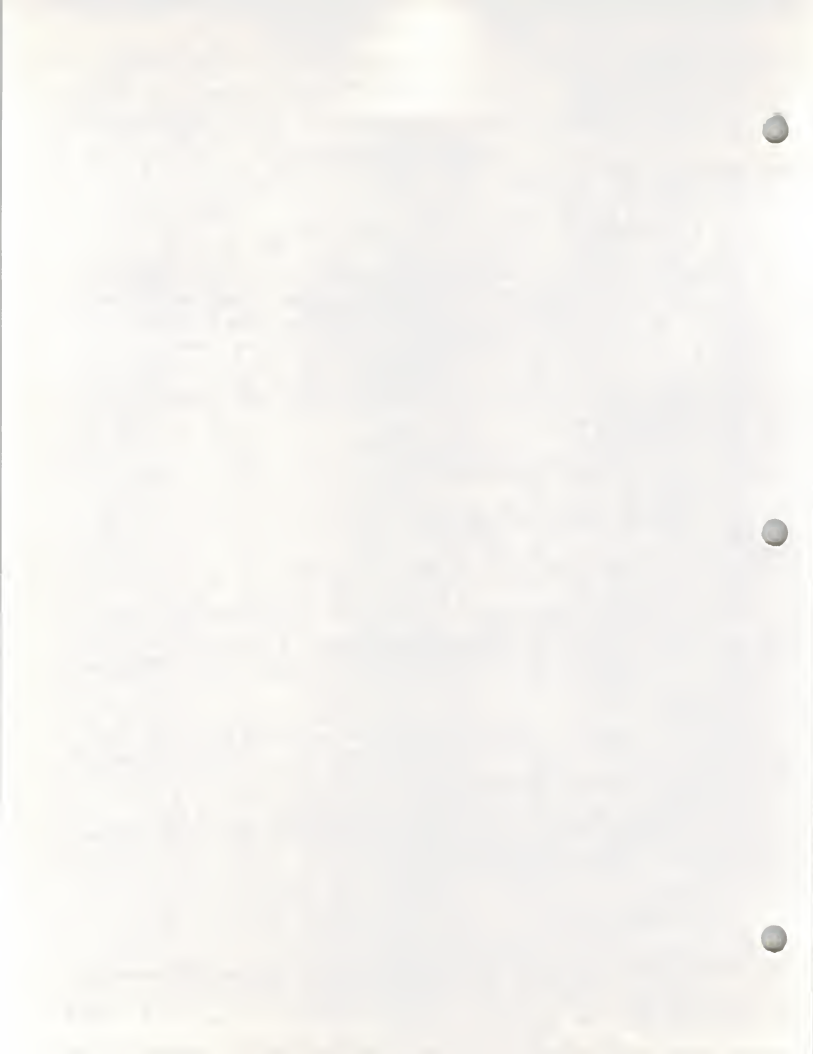
IBM SERVICES BUSINESS

Product Category	SYSTEMS OVER \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">E. ELEMENTS OF SERVICE OFFERINGS</p> <ul style="list-style-type: none">• This category of products is the classic target for third-party maintenance vendors and will continue to be so.• The mainstay of the service offerings in this category is the on-site, multi-shift contract, which can be supplemented by extended service options. These are detailed in INPUT's 1983 <u>Large-scale System User Requirements</u> analysis, August 1983.• Some of the options that may be considered include:<ul style="list-style-type: none">- Guaranteed uptime.- Guaranteed response time.- Guaranteed repair time.- PM and ECO/FLO installation installed in the off-prime shifts.• Each vendor must select the appropriate additional post-sale support functions that field engineering can become responsible for among the following:<ul style="list-style-type: none">- System consulting.- Hardware/software configuration.- Systems training.- Systems documentation.- Add-ons.- Supplies.- Upgrades.• These changes will be phased in over the next five years in most vendor service organizations in differing mixes.			



IBM SERVICES BUSINESS

Product Category	SYSTEMS OVER \$350,000		
Last Updated: October 11, 1983		Source: INPUT	Contact G. Kemp
F. MARKETING PRACTICES			
1. <u>OVERVIEW</u>			
<ul style="list-style-type: none">The sales approach to large-scale systems has not varied over the last 10 years: direct sales to Fortune 500 organizations through benchmarking. Performance ratios have risen dramatically over the last five years. The Japanese have so far been unsuccessful in promoting their mainframe products in the U.S. (and have had limited success in Europe through established vendors such as Siemens and ICL), but they cannot be ruled out in the next technology wave.			
2. <u>DISTRIBUTION CHANNELS</u>			
<ul style="list-style-type: none">Not applicable (direct sales only).			
3. <u>PRICING AND DISCOUNTING</u>			
<ul style="list-style-type: none">Little discounting as such is practical since most contracts are for single units, but some exceptions to the rule must be noted, particularly with large government contracts (e.g., WWMCS) or major replacement RQs (e.g., banks).Much of the flexibility in the price of these systems comes from giveaways on programming support, training, and software. Usually this does not extend to field engineering services.Price erosion has been steady over the years at around 10% per annum across the spectrum of recognized models.			



IBM SERVICES BUSINESS

Product Category	SYSTEMS OVER \$350,000		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
G. MODULE CATEGORIES			
<ul style="list-style-type: none">• Suggested categories:<ul style="list-style-type: none">- Specialized supercomputers (e.g., CRAY).- Multiprocessor, large-scale mainframes.- Single processor, large-scale mainframes.- Multiprocessor, medium-scale mainframes.- Single processor, medium-scale mainframes.- Super minicomputers.			



7. DISPLAYS

— INPUT —



IBM SERVICES BUSINESS

Product Category

DISPLAYS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- Displays are keyboard/screen devices that can generate, display, send, and receive alphanumerical characters. Displays are typically packaged with varying degrees of functional intelligence, ranging from limited function (dumb), to extended (smart), to user programmable (intelligent). In this overview they are grouped into high-resolution (CAD/CAM) and low-resolution (business) groups. High resolution is defined as a minimum resolution of 512 x 512.

2. ENVIRONMENT

- In this and other low-end product markets, price erosion has been continuous, with new products and vendors an almost daily event. The cheaper, low resolution displays now cost less than \$500. All categories of high-resolution displays are experiencing the same erosion.

3. REVENUE (Grade II)

1982 (\$ millions)

- Low-resolution shipments	\$2,488
- High-resolution shipments	<u>140</u>
TOTAL	<u>\$2,628</u>

3. LEADING INDEPENDENT VENDORS

Percent of 1982 User Expenditures

- Televideo	12%
- ADDS	11
- Lear Siegler	7
- Hazeltine	4
- Soroc	4
- Beehive	3



IBM SERVICES BUSINESS

Product Category	DISPLAYS		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp
B. REVENUES 1982-1987			
I.	<u>REVENUE FORECAST</u> (Grade II)	<u>\$ Millions</u>	
		<u>1982</u>	<u>1987</u>
			<u>Percent AAGR</u>
-	Hardware shipments	\$ 2,628	\$ 7,700
-	After-sales support.	<u>735</u>	<u>2,156</u>
	TOTAL	\$ <u>3,363</u>	\$ <u>9,856</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)		
-	Maintenance	\$ 555	\$ 1,574
-	Education	(included in systems, when available)	
-	Over-the-counter parts	<u>180</u>	<u>582</u>
	TOTAL	\$ <u>735</u>	\$ <u>2,156</u>
3.	<u>SOFTWARE SUPPORT</u> (Grade III)	(none)	

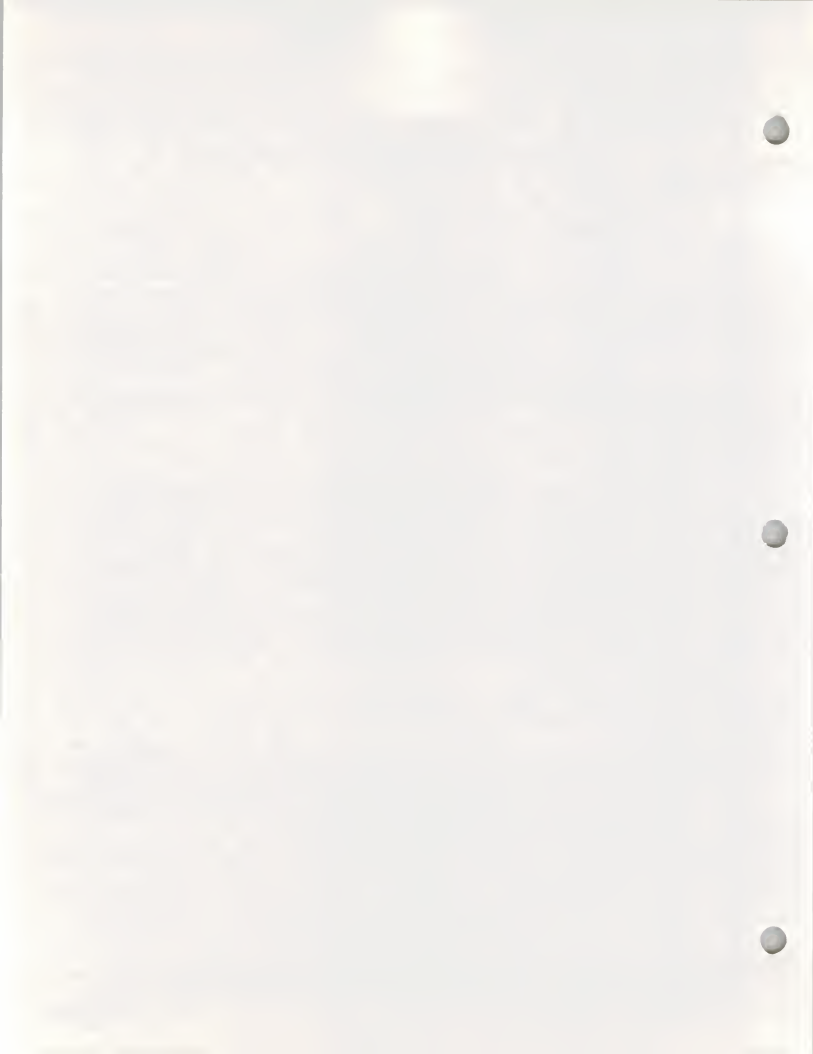


IBM SERVICES BUSINESS

Product Category	DISPLAYS		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp

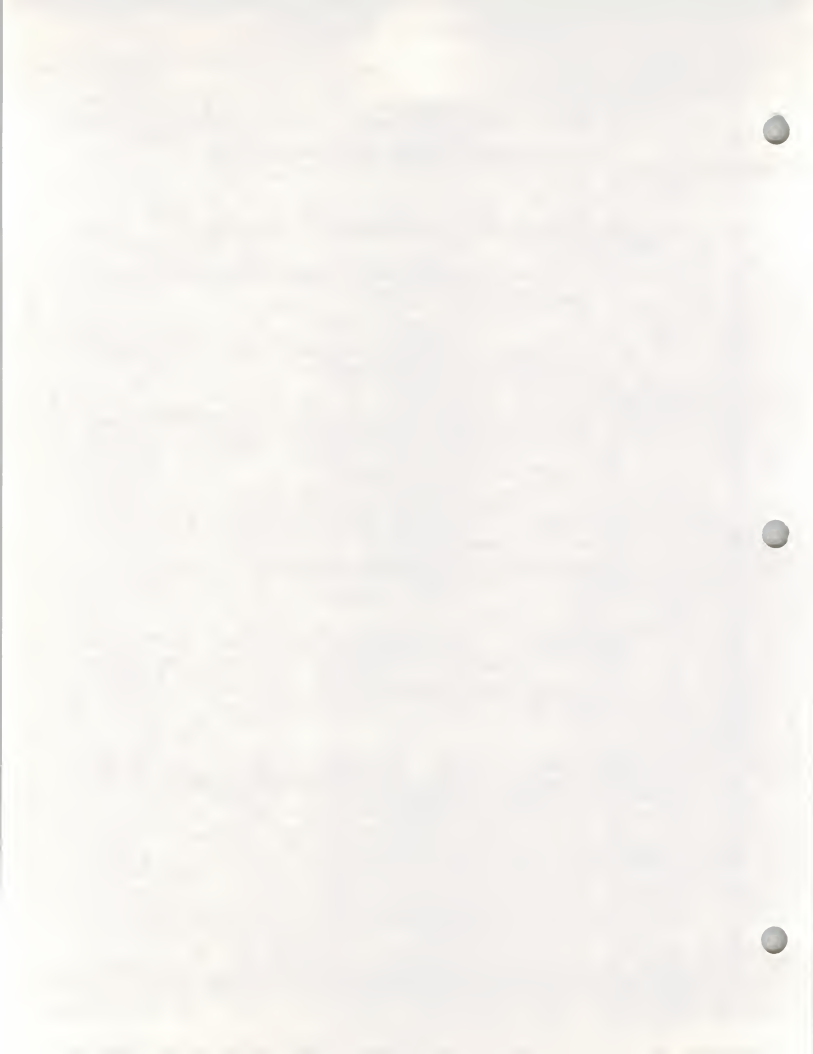
C. SUPPORT SERVICES REQUIREMENTS AND ISSUES

1. CURRENT
 - The prevalent mode of support for the portable display market is to allot an extra terminal to each site to serve as a replacement in time of failure. This allows long response times (as much as 48 hours for some vendors). Little on-site repair is accomplished if the display is portable. Where the display is nonportable or integrated into the system (e.g., CAD/CAM/CAE), response times have to be very short because the display is the principal work area.
2. FUTURE
 - This dichotomy in user service requirements is likely to continue so that nonportable, high-resolution, and intelligent displays will require response times equivalent to the system to which they are attached, while portable, low-resolution, and low-functionality displays will be supported by on-site spare terminals. It is likely, therefore, that support centers will support the low end of the display spectrum (swapout units, then centralized repair) while support for the high end of the spectrum will be further integrated into systems support.
3. DECISION MAKER EXPECTATIONS
 - The expectations of the decision makers are that the failure of a display should not have any impact on the availability of the system that it serves. This is reasonable except when the display is the central work area and is integrated into the system (e.g., CAD/CAM/CAE).



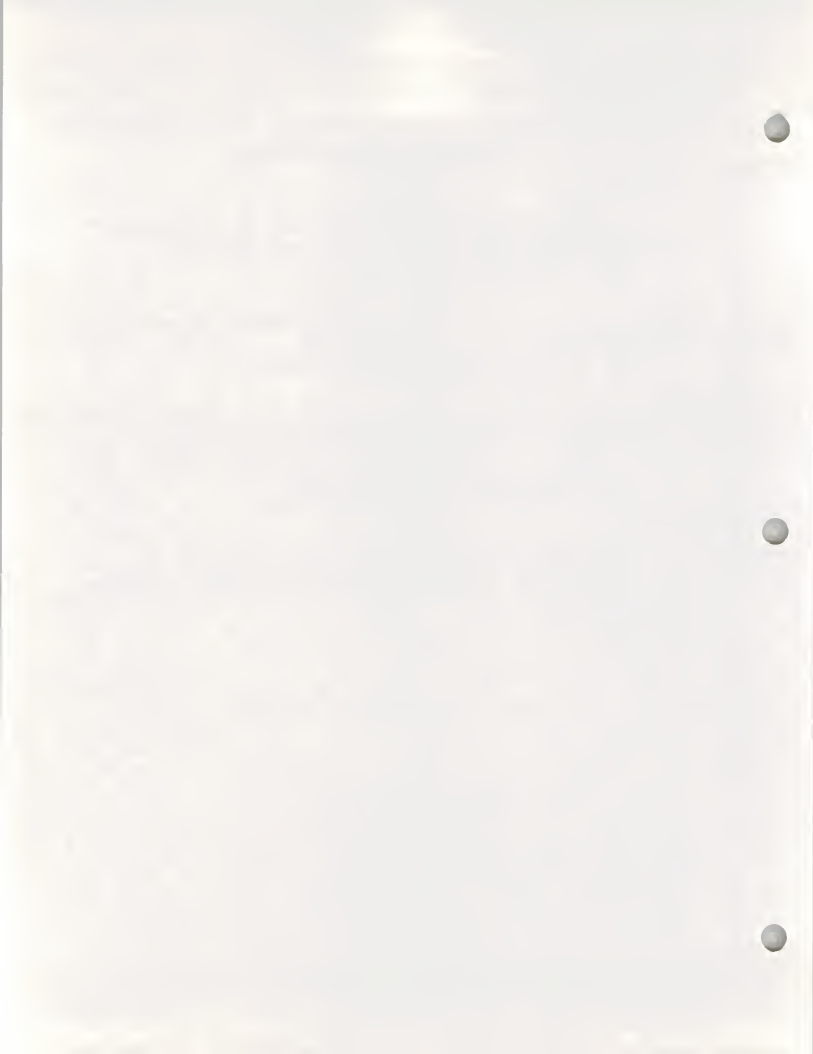
IBM SERVICES BUSINESS

Product Category	DISPLAYS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p>D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">• There are three factors working in opposite directions at present:<ul style="list-style-type: none">- Increased level of integration, which simplifies the modularization of the display unit.- Increased functional content ("intelligence"), which is permeating the entire display spectrum from the top down.- Increasing demand for much higher resolution capabilities to allow sharper graphics readouts/printouts in all markets (technical, scientific, medical, industrial, and business).• The increased modularity argues in favor of swapout module maintenance in the field, but is counterbalanced by the manpower cost to accomplish the swapout and by the fact that users like the convenience of the on-site spare terminal.• The increased functional content argues in favor of in-field maintenance, but again this is counterbalanced by the convenience of the spare terminal; (some vendors offer a spare intelligent terminal, and as costs diminish it is likely that more will).• Higher resolution displays are almost always integrated with the system they serve so that on-site maintenance is a must. The applications they serve usually demand at least eight-hour response.			



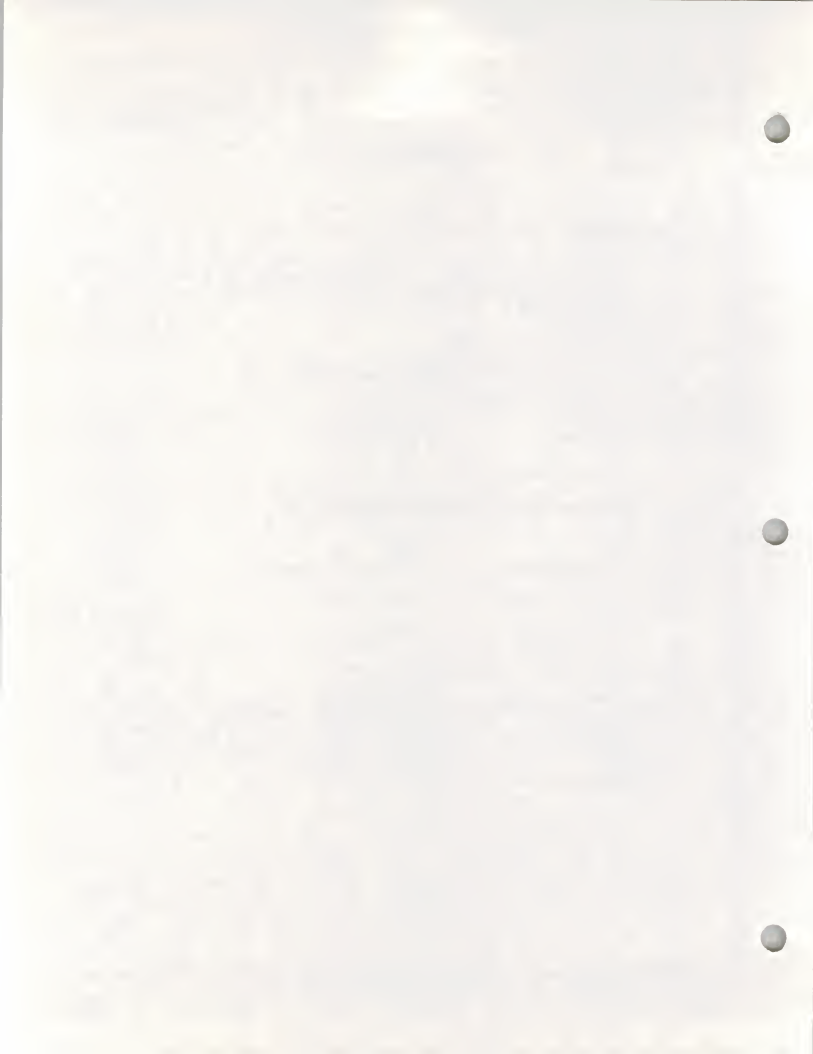
IBM SERVICES BUSINESS

Product Category	DISPLAYS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p>E. ELEMENTS OF SERVICE OFFERINGS</p> <ul style="list-style-type: none">• The mainstay of portable display service is the repair center supported by a pickup (delivery service). The spare on-site terminal is usually charged to marketing as a price discount.• Intelligent terminals are increasingly treated in the same way, except when they are packaged and sold as a small business system (i.e., with the CPU as an integral part of the display itself, linked with a fixed disk and a printer).• High-resolution displays are currently maintained on-site. As higher resolution is applied to a broader section of the terminal market, it is likely that the high-resolution displays that are nonscientific or technical will have to be treated in the same way as the portable terminals.• Over-the-counter parts are essential to the support of value-added resellers, those distributors that do their own maintenance, and third-party maintenance organizations. This is a lucrative business and one that improves the suppliers' service margins.			



IBM SERVICES BUSINESS

Product Category	DISPLAYS		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp
F. MARKETING PRACTICES			
1. <u>OVERVIEW</u>			
<ul style="list-style-type: none"> The display environment is experiencing the latter stages of a price and function war, where product introductions are fast paced, prices and profit margins are reduced, and the competitive advantage moves rapidly from one vendor to another. 			
2. <u>DISTRIBUTION CHANNELS</u>			
<ul style="list-style-type: none"> Displays are sold through three principal channels: <ul style="list-style-type: none"> - Distributors (e.g., Hamilton Avnet). - Third parties (i.e., value-added resellers). - Direct sales. The approximate shares of shipments are as follows: 			
	<u>1982</u>	<u>1987</u>	
- Distributors	8%	10%	
- Third parties	32	35	
- Direct sales	60	55	
3. <u>PRICING AND DISCOUNTING</u>			
<ul style="list-style-type: none"> At the low end (dumb terminals) this constant erosion of prices is most evident with typical prices at 60% of the level two years earlier. At the high end (high resolution, high functionality) the battle has been more one of functionality, although prices have eroded by 15% per annum. As this continues, the number of distributors is likely to be reduced, while value-added resellers increase market share. 			



IBM SERVICES BUSINESS

Product Category

DISPLAYS

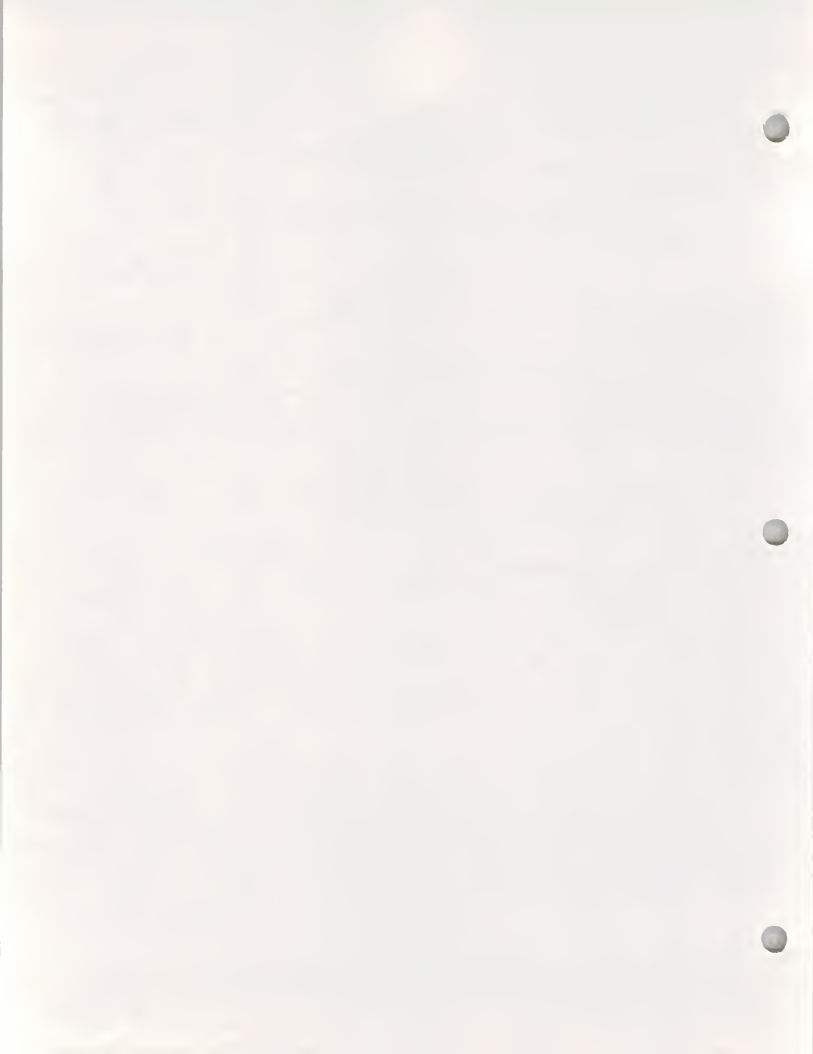
Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

G. MODULE CATEGORIES

- The suggested module categories are as follows:
 - Dumb, glass TTY terminals.
 - IBM 3270 and compatible terminals (smart).
 - Other smart terminals.
 - Standalone intelligent terminals.
 - Clustered intelligent terminals.
 - Graphics terminals.
 - High-resolution displays.



8. PRINTERS/COPIERS/PLOTTERS

— INPUT —



IBM SERVICES BUSINESS

Product Category

PRINTERS/COPIERS/PLOTTERS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- This category includes all products that produce hard-copy text and graphics output. Copiers are included because the technology is applicable to the nonimpact hard-copy output market (in effect they are nonimpact page printers). All three categories of products have similar maintenance requirements.

2. ENVIRONMENT

- The printer environment is divided into impact and nonimpact products. The nonimpacts have been successful in penetrating the top and the bottom of the impact printer market (high-speed/high-quality, low-speed/low-quality). Price erosion has been significant at the low end of both impact and nonimpact products (up to 15% in some products in one year). Plotters are divided into pen and nonimpact plotters (e.g., electrostatic printer/plotters).

3. REVENUE (Grade II)

1982 (\$ millions)

-	Printers (shipments)	\$2,950
-	Plotters (shipments)	1,300
-	Copiers (shipments)	3,100
-	After-sales support	<u>850</u>
	TOTAL	<u>\$8,200</u>

4. LEADING VENDORS

Percent of 1982 User Expenditures

-	IBM	19%
-	Xerox	14
-	Canon	12



IBM SERVICES BUSINESS

Product Category

PRINTERS/COPIERS/PLOTTERS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

B. REVENUES 1982-1987

1. REVENUE FORECAST (Grade II)

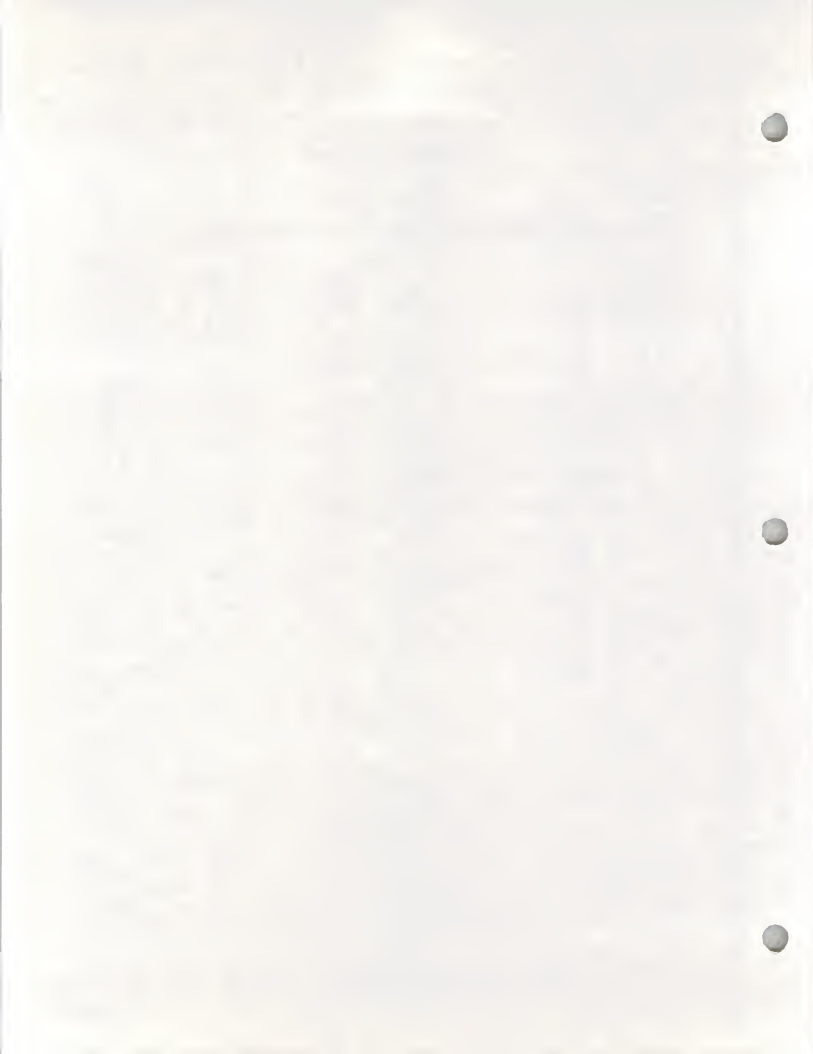
Shipments (\$ millions)

	<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
- Printer	\$ 2,950	\$ 9,000	25%
- Plotter	1,300	4,300	27
- Copier	3,100	7,400	19
- After-sales support	<u>850</u>	<u>2,600</u>	<u>25</u>
TOTAL	\$ <u>8,200</u>	\$ <u>23,300</u>	<u>23%</u>

2. HARDWARE SUPPORT (Grade III)

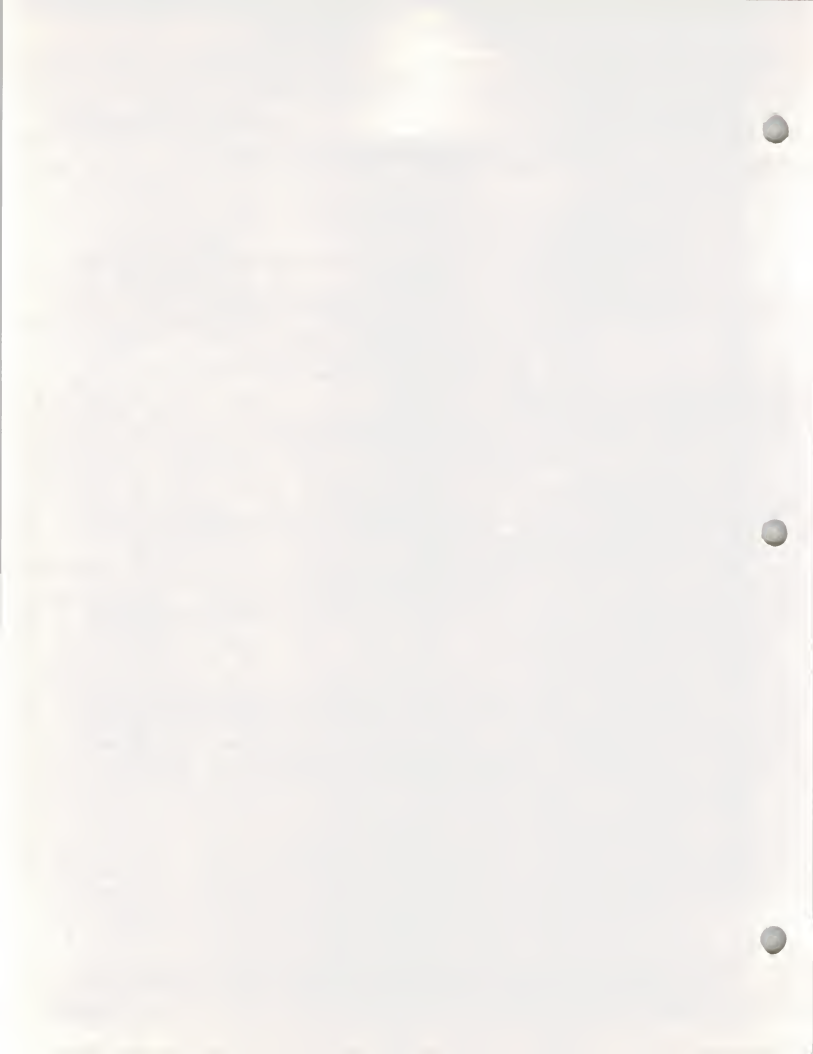
- Maintenance	\$ 680	\$ 2,140	26%
- Education	*	*	NA
- Over-the-counter parts	<u>170</u>	<u>560</u>	<u>27</u>
TOTAL	\$ <u>850</u>	\$ <u>2,700</u>	<u>26%</u>

* Negligible



IBM SERVICES BUSINESS

Product Category	PRINTERS/COPIERS/PLOTTERS		
Last Updated: October 11, 1983		Source: INPUT	Contact G. Kemp
<p>C. SUPPORT SERVICES REQUIREMENTS AND ISSUES</p> <p>1. <u>CURRENT</u></p> <ul style="list-style-type: none">• The current service requirements of this category of equipment include the complete spectrum of service options:<ul style="list-style-type: none">- User self-maintenance (for the so-called "personals").- Carry-in/ship-in (for portables).- Dealer and distributor support contracts with spares, training, and repair center infrastructure.- Third-party maintenance support infrastructure.- Direct, on-site service. <p>2. <u>FUTURE</u></p> <ul style="list-style-type: none">• There will be little change in the types of service available for this category, and little change in the distribution of revenue from the different services. The only major changes will be:<ul style="list-style-type: none">- A continuous improvement in reliability.- A continuous erosion of all price levels from the page/laser printer to the personal copier. <p>3. <u>DECISION MAKER EXPECTATIONS</u></p> <ul style="list-style-type: none">• There will be an increase in user expectations of the product availability by as much as 25% over the next five years. This will be due to a sharp rise in the use of graphics as a data presentation media and to the integration of graphics with text (which increases the frequency of use of graphics to that of the use of text). This is a classic example of an impending squeeze on maintenance margins: increased availability demands, decreased maintenance revenue.			



IBM SERVICES BUSINESS

Product Category

PRINTERS/COPERS/PLOTTERS

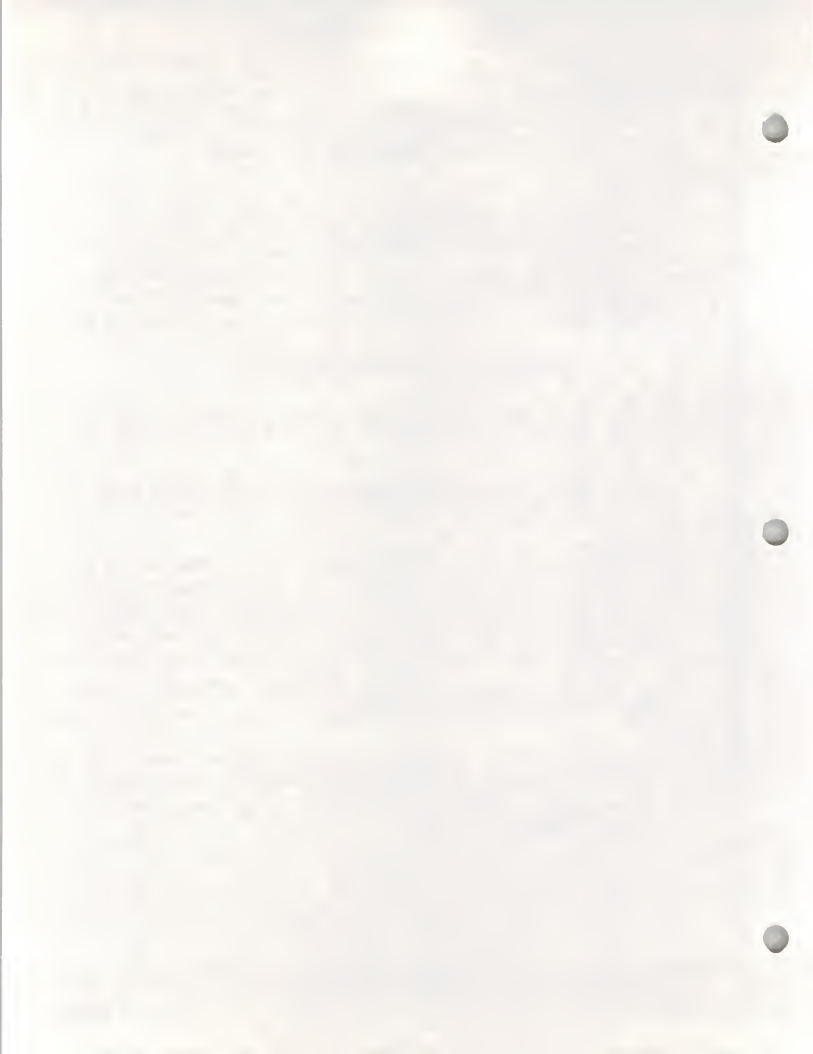
Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

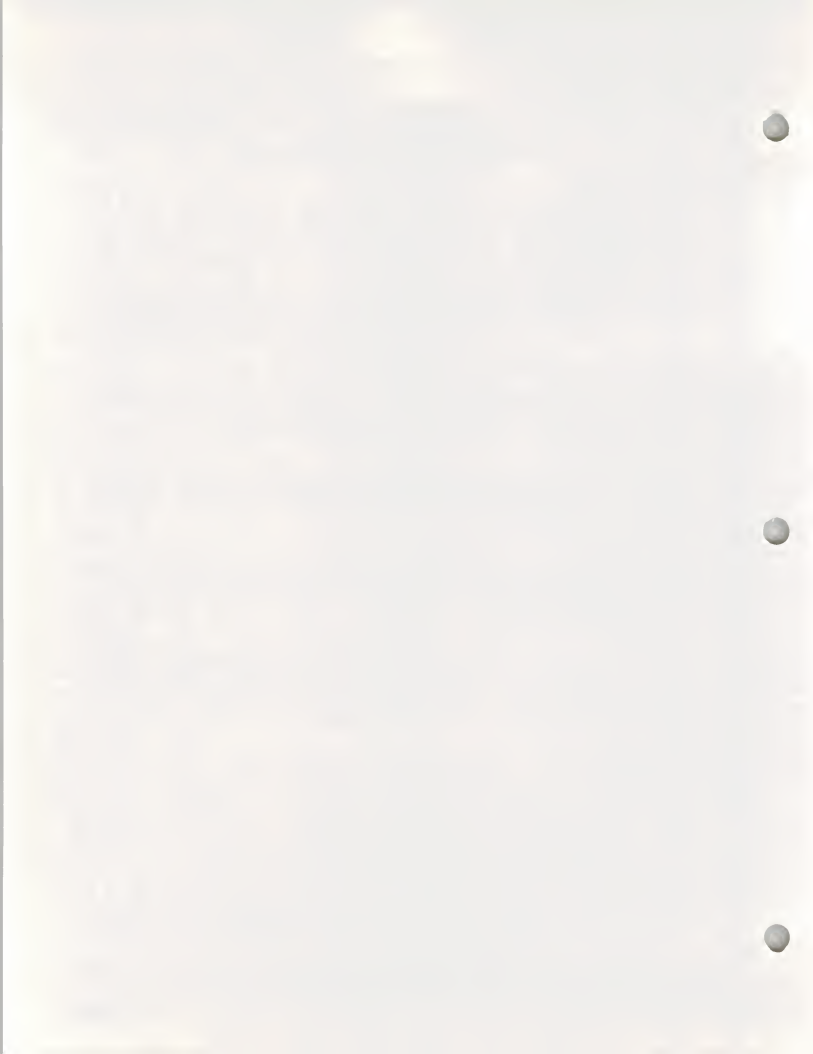
D. TECHNOLOGY ISSUES AFFECTING SUPPORT

- While it was formerly acceptable to compromise print quality and speed because of a decrease in prices, this trend has ceased. This is particularly true in the serial printer environment where multiwire/staggered-array products have dramatically changed the profile of the impact matrix printer environment:
 - Printer speeds are rising in every price category.
 - Better design and construction are improving reliability and print quality.
 - Integration of the microprocessor is boosting local capability so that functionality is flourishing.
- There is currently no viable alternative to the band/belt, drum, and chain/train printers for the medium-speed heavy-duty printer applications. All of these devices have regular and heavy maintenance needs by virtue of their electromechanical design. Over the next five years this dominance will be partially ended, but the composition of the installed base will be relatively unaffected. As a result the maintenance requirements will continue as they are today in the large-printer environment.
- New technologies include ion deposition and magnetographic page printers, both of which use copier techniques (laser-xerography and copier-toning respectively) and presage the limited merging of the copier and printer/plotter environments.



IBM SERVICES BUSINESS

Product Category	PRINTERS/COPIERS/PLOTTERS		
Last Updated: <u>October 11, 1983</u>	Source: INPUT	Contact G. Kemp	
E. ELEMENTS OF SERVICE OFFERINGS			
<ul style="list-style-type: none">• With the exception of the portable and personal-printer end of the product spectrum, the principal service offerings are:<ul style="list-style-type: none">- On-site PM per-call and contract maintenance, both as a part of the system contract (printers/plotters) and as standalone devices (copiers).- Dealer/distributor training, spares, and parts distribution logistic support (for the vast network of dealers that many of the printer manufacturers sell through, e.g., EPSON-1000 dealers).- Third-party service support, for mixed product lines sold by a given vendor (complementing his own products or simply composing his printer capability).• The portable and personal printer products are essentially supported by carry-in/ship-in service centers in support of limited user self-maintenance (e.g., disposable cartridges).• An acceptable alternative at this low end is the spare printer, which supplements a 24-hour response pick-up service with one-week repair for the failed unit it replaces.			



IBM SERVICES BUSINESS

Product Category

PRINTERS/COPIERS/PLOTTERS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

F. MARKETING PRACTICES

1. OVERVIEW

- This category of products has experienced a market improvement in product quality, both functionally and from the reliability standpoint, over the last three years. In that same timeframe competition has become fierce, particularly in the low-end serial printer and low-cost copier environments where the Japanese have all but dominated. This development is likely to be duplicated in the next range of printer products and higher function copiers. Plotters have yet to be affected.

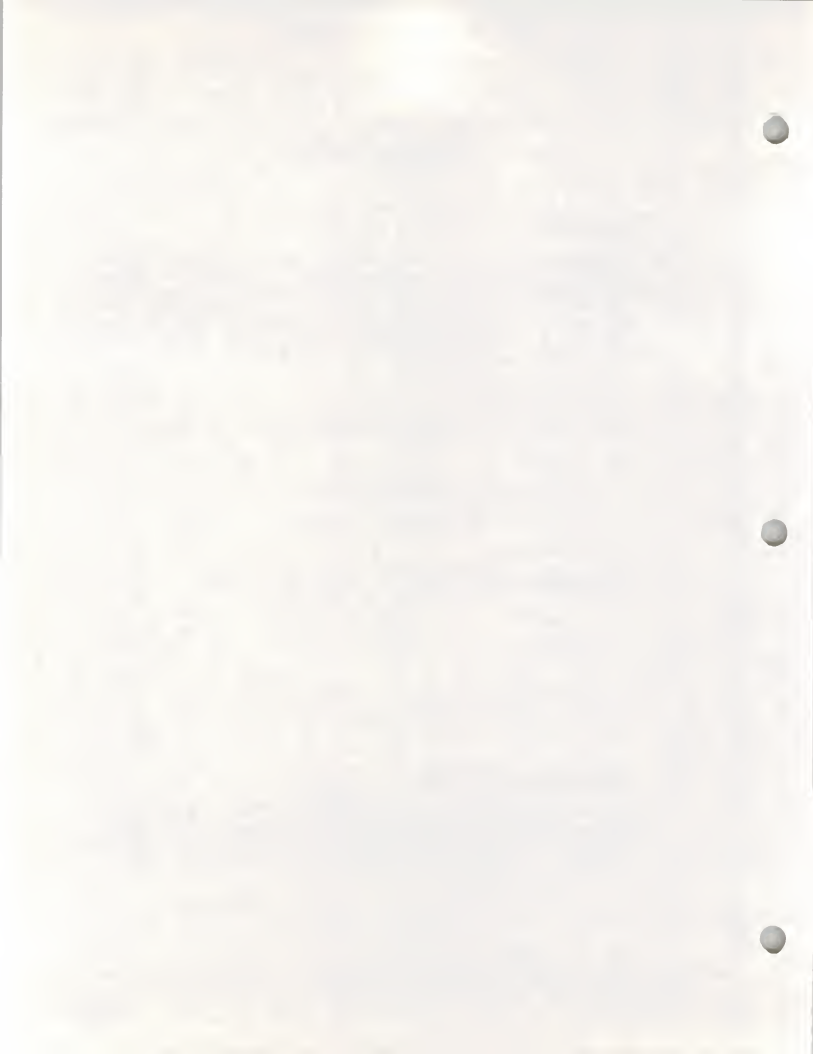
2. DISTRIBUTION CHANNELS

- The principal distribution channels for these products are:
 - Distributors.
 - System integrators (printers and plotters).
 - Value-added resellers (printers and plotters).
 - Direct sales.
- The approximate share of shipments are as follows, by value:

	<u>1982</u>	<u>1987</u>
- Distributors	28%	28%
- System integrators	20	19
- Value-added resellers	10	8
- Direct sales	42	45

3. PRICING AND DISCOUNTING

- Very aggressive discounting policies are used to sell the products through third-party channels and to large accounts by direct sales. In addition, it is not unusual for large orders to be subject to bidding wares from several competitive vendors, such that standard discounting practices are hard to discern.



IBM SERVICES BUSINESS

Product Category

PRINTERS/COPIERS/PLOTTERS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

G. MODULE CATEGORIES

- Suggested module categories:

- Printers:

- Impact matrix.
- Impact solid font.
- Nonimpact serial.
- Nonimpact page, medium speed.
- Nonimpact page, high speed.
- Medium-speed line printers (belt/band, chain/train).
- High-speed line printers (drum).

- Plotters:

- Drum.
- Belt.
- Flat bed.

- Copiers:

- Personal.
- Medium-speed.
- High-speed.



9. POINT-OF-SALE DEVICES

INPUT



IBM SERVICES BUSINESS

Product Category

POINT-OF-SALE DEVICES

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- Point-of-sales (POS) devices combine cash register functions with electronic data capture capabilities for cashpoints. They can be electromechanical or electronic and are usually connected locally to a processor and storage for two-way communications of data relating to the sales transaction. Automatic teller machines are not included here, but are with banking equipment in section 13. The three main POS categories are general-purpose retail, super-markets, and credit authorization terminals.

2. ENVIRONMENT

- The initial move to bring the cashpoint into the electronic age was the electronic cash register (ECR), a free-standing unit with limited storage. The on-line POS terminals of today's market use a variety of automatic data capture techniques, are the key to up-to-the-minute inventory control and price discounts implementation, and are slowly gaining electronic funds transfer (EFT) capabilities. The data captured is now being marketed by such companies as Information Resources, Inc.

3. REVENUE (Grade II)

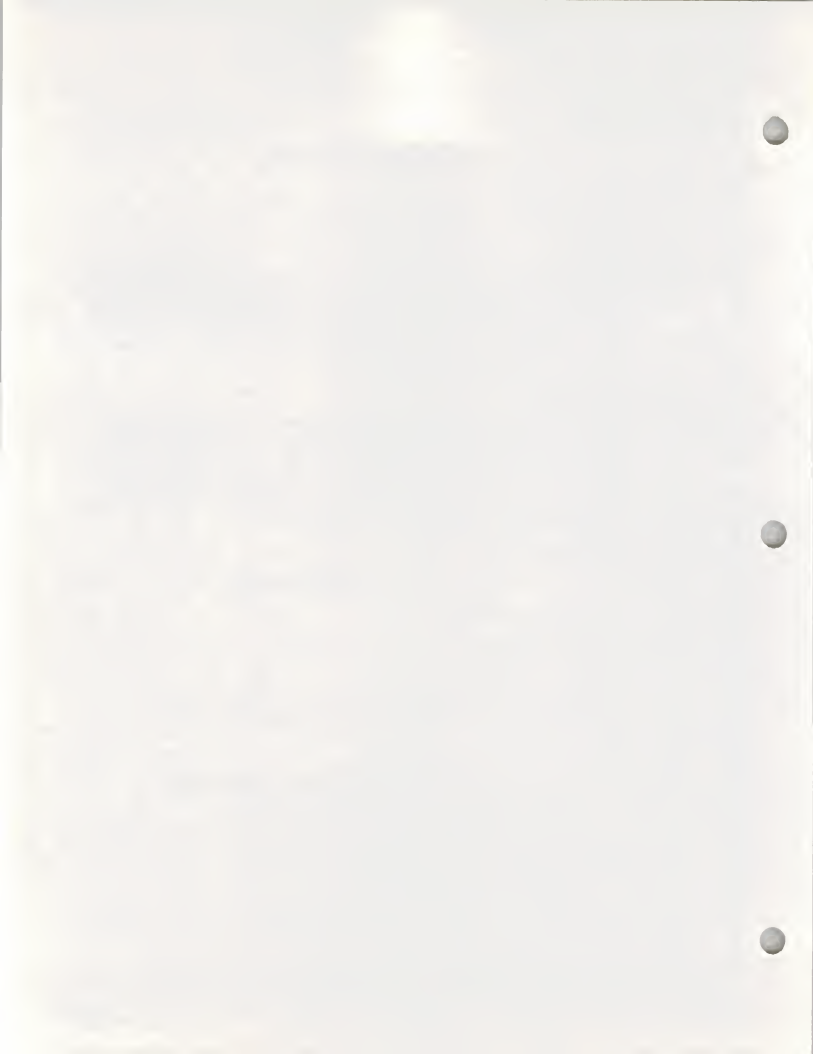
1982 (\$ millions)

- Hardware shipments	\$408
- Software sales	30
- After-sales support	<u>65</u>
TOTAL	<u>\$503</u>

4. LEADING VENDORS

Percent of 1982 User Expenditures

- Diebold	41%
- IBM	22
- Docutel	16
- NCR	14



IBM SERVICES BUSINESS

Product Category		POINT-OF-SALE DEVICES		
Last Updated: <u>October 11, 1983</u>		Source: <u>INPUT</u>		Contact <u>G. Kemp</u>
B. REVENUES 1982-1987				
1.	<u>REVENUE FORECAST</u> (Grade II)	<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
-	Hardware shipments	\$408	\$ 1,015	20%
-	Software sales	30	135	35
-	After-sales support	<u>65</u>	<u>160</u>	<u>19</u>
	TOTAL	<u>\$503</u>	<u>\$ 1,310</u>	<u>21%</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 45	\$ 103	18%
-	Education	1	3	25
-	Over-the-counter parts	<u>9</u>	<u>24</u>	<u>22</u>
	TOTAL	<u>\$ 55</u>	<u>\$ 130</u>	<u>19%</u>
3.	<u>SOFTWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 10	\$ 28	18%
-	Education	*	*	NA
-	Installation	<u>*</u>	<u>2</u>	<u>NA</u>
	TOTAL	<u>\$ 10</u>	<u>\$ 30</u>	<u>25%</u>
	* Negligible			

IBM SERVICES BUSINESS

Product Category

POINT-OF-SALE DEVICES

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

C. SUPPORT SERVICES REQUIREMENTS AND ISSUES

1. CURRENT

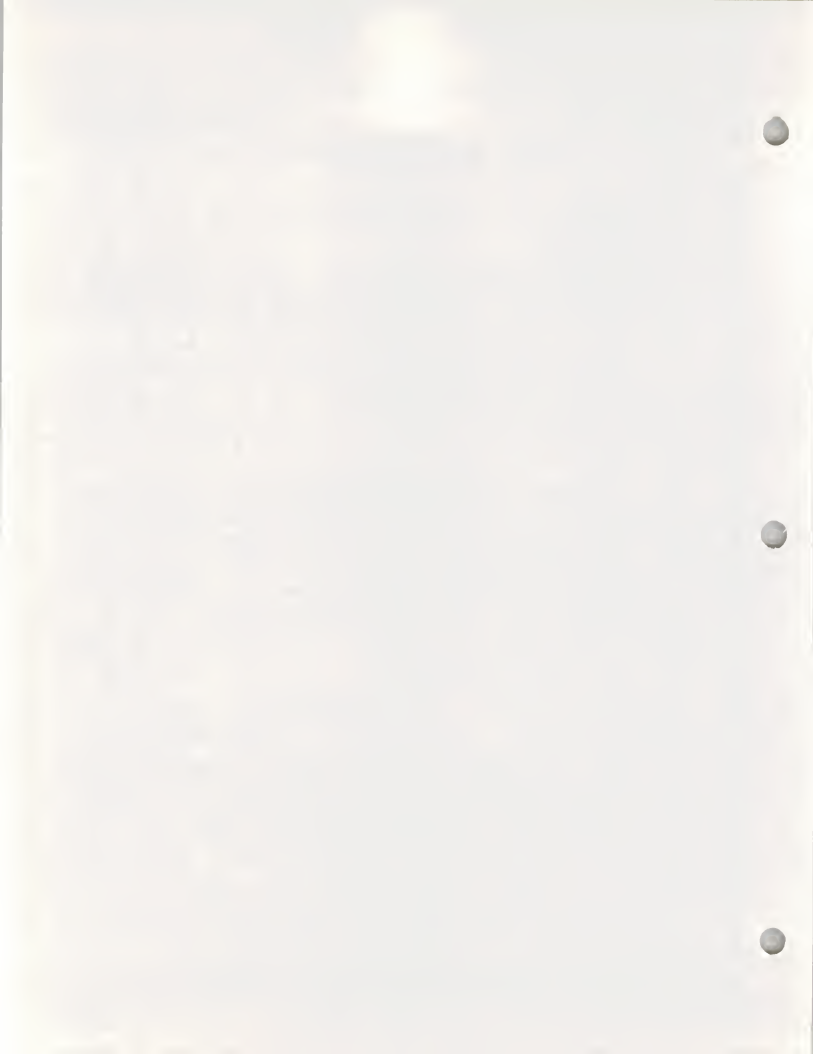
- POS devices are generally installed in clusters so that the failure of a single device does not unduly affect the performance of the total system. However, the high-average unit price (\$5,000) has so far precluded the use of spare on-site terminals as a temporary replacement for failed units (as for displays, see Chapter VII, section C). Therefore, on-site repair with a response time of less than eight hours has so far been the norm.

2. FUTURE

- The POS unit is not generally portable and is likely to stay that way. Therefore, carry-in/ship-in maintenance is unlikely to be seen in the near future. It is possible that the constant price erosion of some categories of terminals (e.g., credit authorization) may make it possible to offer on-site spare units. Nevertheless, the predominant service requirement in the next five years will be on-site service with a response time approaching four hours.

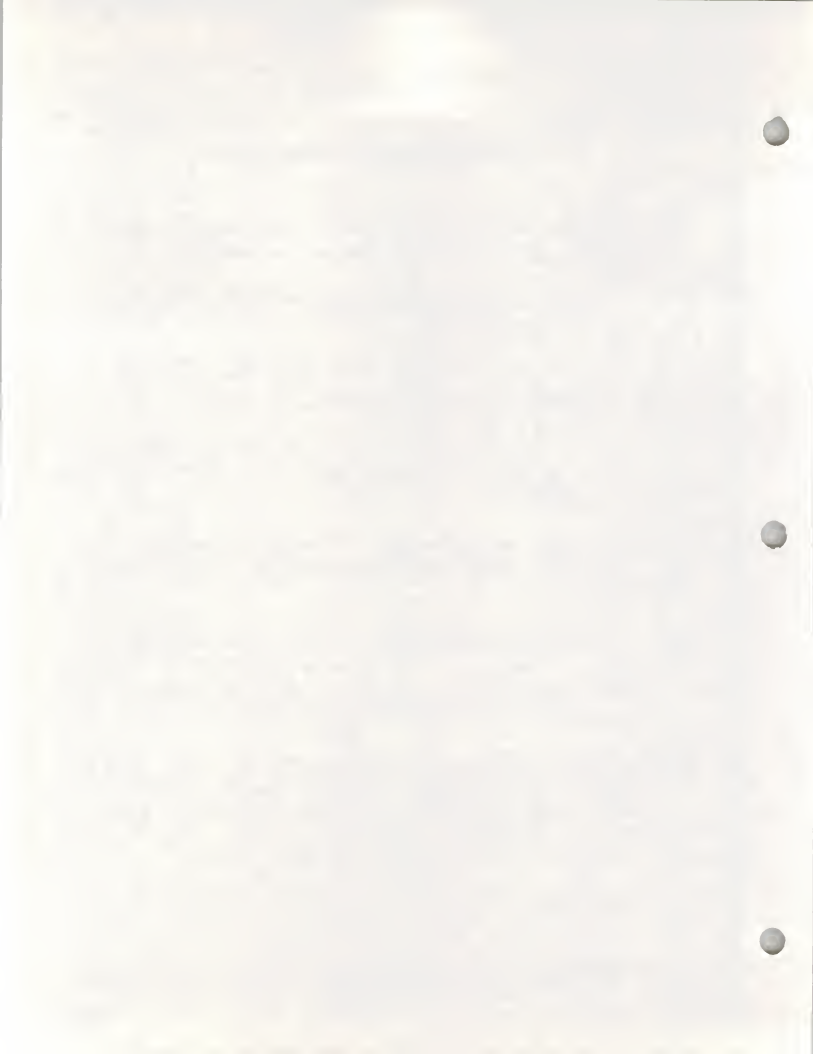
3. DECISION MAKER EXPECTATIONS

- The overall service requirements of the terminal user are examined in INPUT's Analysis of User Requirements for Peripherals and Terminals, September 1983. The principal concern of decision makers is system reliability and system availability, both of which are on the increase in all vendors' products. Service performance is also up, so that user expectations are likely to be met.



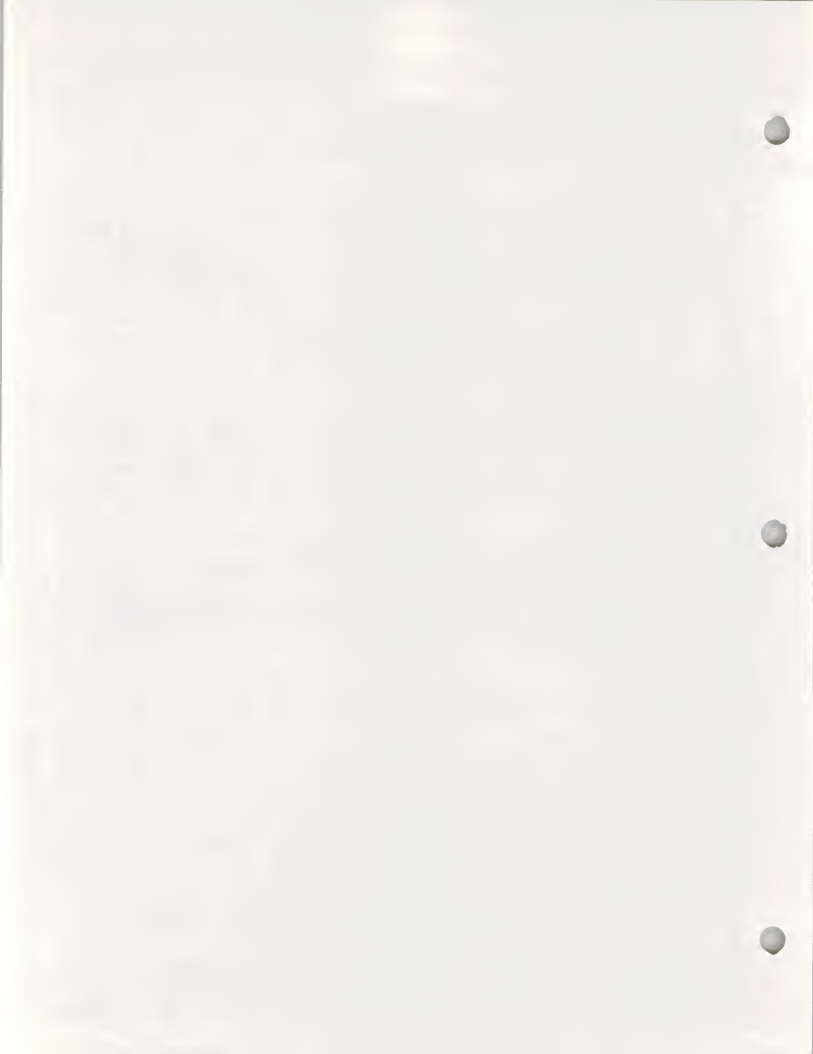
IBM SERVICES BUSINESS

Product Category	POINT-OF-SALE DEVICES		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">● As with the entire spectrum of displays and terminals, there are three factors affecting support that are presently working in opposite directions:<ul style="list-style-type: none">- Increased level of design integration, which simplifies the modularization of the POS units.- Increased functional content ("intelligence") that is permeating the entire POS spectrum from the top down.- Increased integration of the role(s) that each POS is called upon to play along with, with a narrowing of the vertical market that each unit addresses.● The increased modularity argues in favor of swapout module maintenance in the field, but is counterbalanced by the manpower cost to accomplish the swapout.● The increased functional content argues in favor of in-field maintenance, but this is counterbalanced by the potential convenience of the on-site spare terminal; (some vendors have begun offering a spare intelligent terminal, and as costs diminish, it is likely that more will).● The applications that POS terminals serve usually demand at least eight-hour responses. This will be reduced to four hours, making the cost a significant element of field service and encouraging the use of on-site spare terminals.			



IBM SERVICES BUSINESS

Product Category	POINT-OF-SALE DEVICES		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp
E. ELEMENTS OF SERVICE OFFERINGS			
<ul style="list-style-type: none">• The mainstay of the point-of-sale device service is on-site service supported by a repair center. Spare on-site terminals are not yet used in any quantity but will be used increasingly as terminal prices drop below \$1,500.• Intelligent POS terminals are treated in the same way, including when they are packaged and sold as small business systems (i.e., with a CPU as an integral part of the terminal itself, linked with a fixed disk and a printer).• Local network configured systems (e.g., for supermarkets) are currently maintained on-site. As higher proportions of the installed terminal market are placed in remote locations, system reliability will have to be dramatically improved.• Over-the-counter parts are essential to the support of value-added resellers, those distributors that do their own maintenance, and third-party maintenance organizations. This is a lucrative business and one that improves the manufacturer's service margins, providing that competition is not encouraged or facilitated.			



IBM SERVICES BUSINESS

Product Category

POINT-OF-SALE DEVICES

Last Updated: October 11, 1983

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F. MARKETING PRACTICES

1. OVERVIEW

- The point-of-sale environment is entering a phase of functional consolidation, where the data captured by the terminal is put to uses other than standard inventory depletion, sales statistics, and cash transaction management. Functions being integrated include credit authorization, instant debit from bank account, and other electronic funds transfer (EFT) related transactions. The environment is very competitive and has been slow to develop.

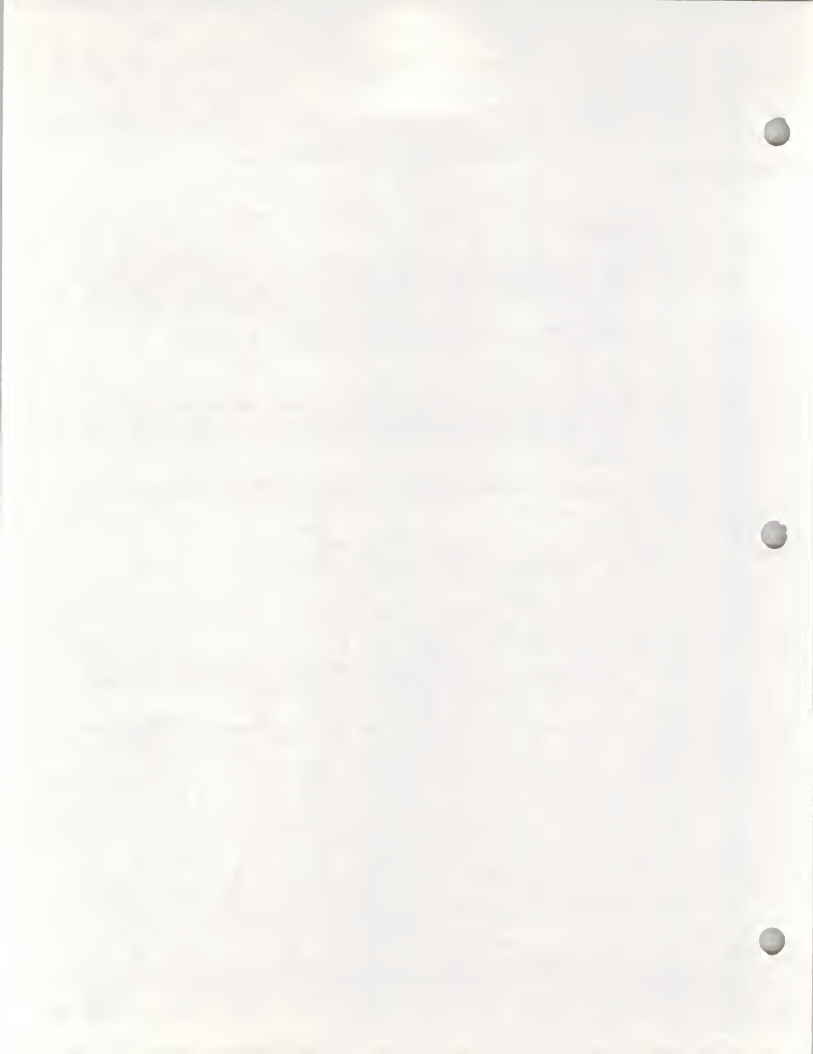
2. DISTRIBUTION CHANNELS

- The main distribution channel is the direct sales route, supplemented by third-party, OEM-like agreements between manufacturers and major retail chains, where the latter act as systems houses for their own stores, franchises, or affiliates.
- The approximate shares of shipments through these two channels are as follows:

	<u>1982</u>	<u>1987</u>
- Direct sales	78%	85%
- OEM and other	22	15

3. PRICING AND DISCOUNTING

- The highly competitive nature of the environment ensures that discounting is aggressive and constantly changing. It is not atypical to find discounts ranging up to 35% on very large contracts.
- Unit prices have fallen steadily, slowed by a rapid increase in the functional content of the POS device and the development of new applicational markets.



IBM SERVICES BUSINESS

Product Category

POINT-OF-SALE DEVICES

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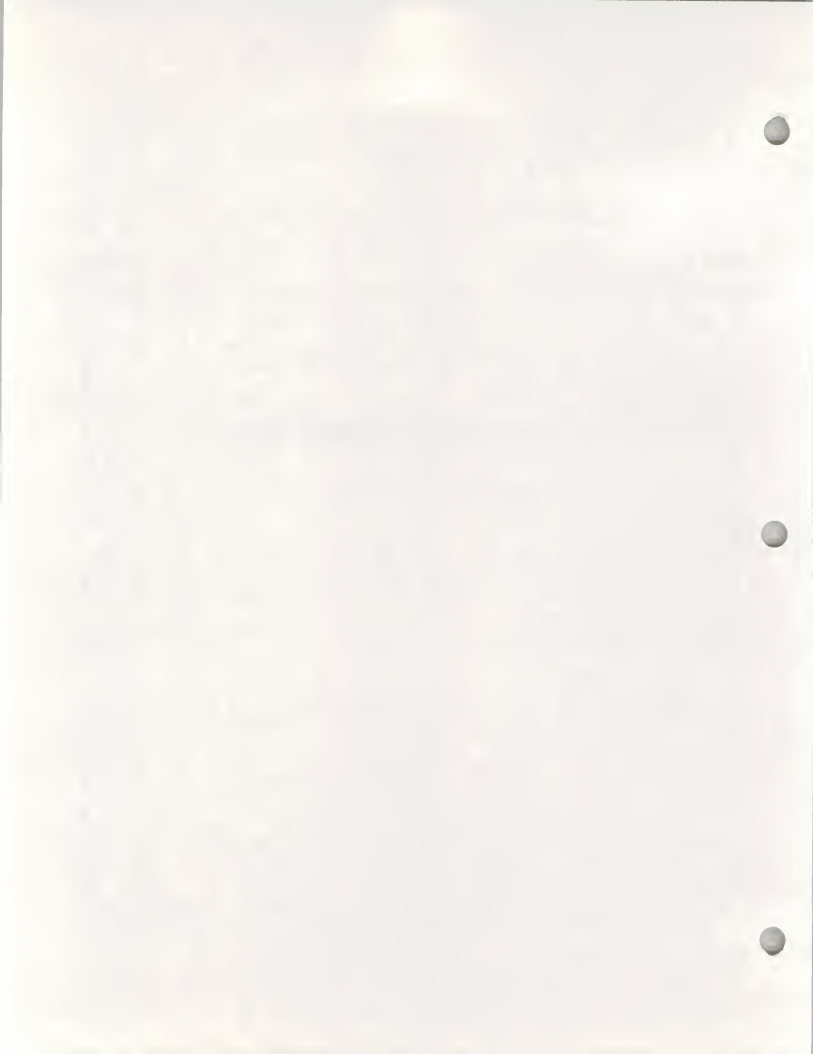
G. MODULE CATEGORIES

- Suggested module categories are, by application area:
 - Gas station terminals.
 - Supermarket systems.
 - General retail systems.
 - Credit authorization terminals.



10. OTHER PERIPHERALS

INPUT



IBM SERVICES BUSINESS

Product Category	OTHER PERIPHERALS		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- This category includes the main peripherals that have not been treated elsewhere in the report, specifically:
 - Back-end processors (so-called data base processors).
 - Floppy disks.
 - Disk drives.
 - Tape drives.
- With the exception of back-end processors, all of the shipment values in this section are counted elsewhere (specifically in the system chapters 5, 6, and 7).

2. ENVIRONMENT

- The products in this category compete with one another in that the main suppliers of these products constantly strive to provide greater cost-effective storage. Price battles will continue to intensify, but the success of one segment leads to the development of another: the increasing popularity of 300/600 MB disks means a ready environment for bit-streaming tape drives for data backup.

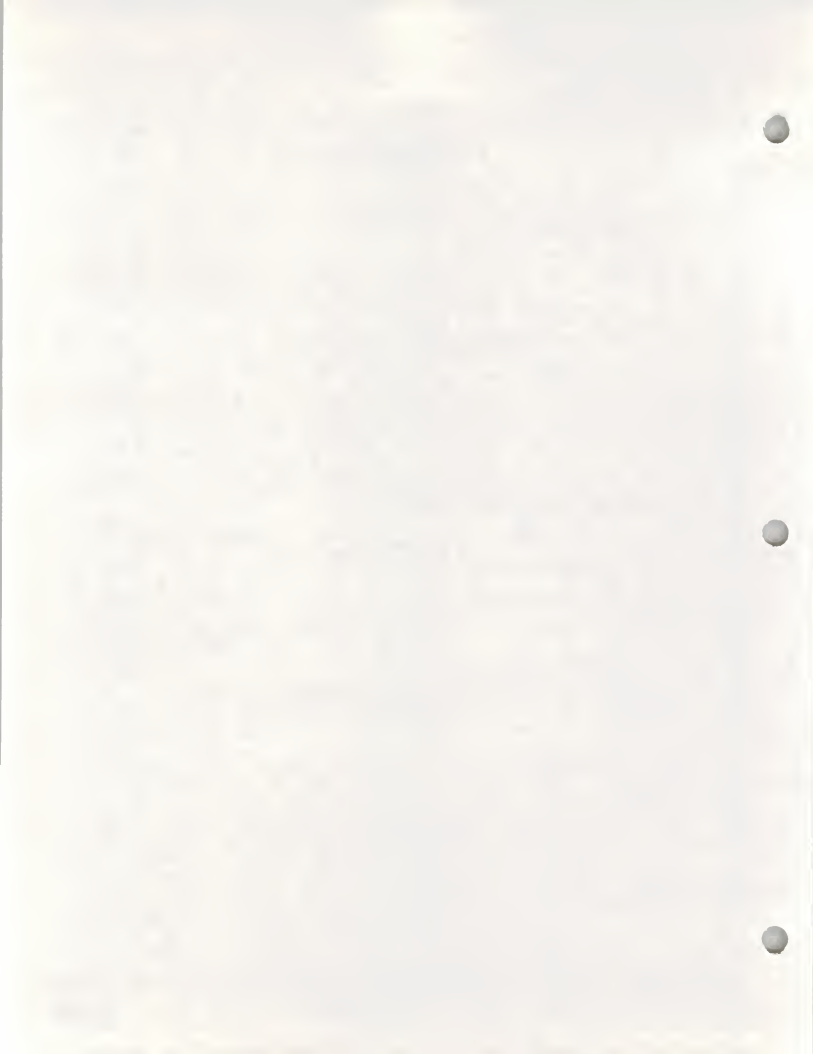
3. REVENUE (Grade II)

	<u>1982 (\$ millions)</u>
- BEP shipments	\$ 45
- Floppy disk drives	2,300
- Disk drive shipments	3,800
- Tape drive shipments	2,100
- After-sales support	<u>1,290</u>
TOTAL	<u>\$ 9,535</u>



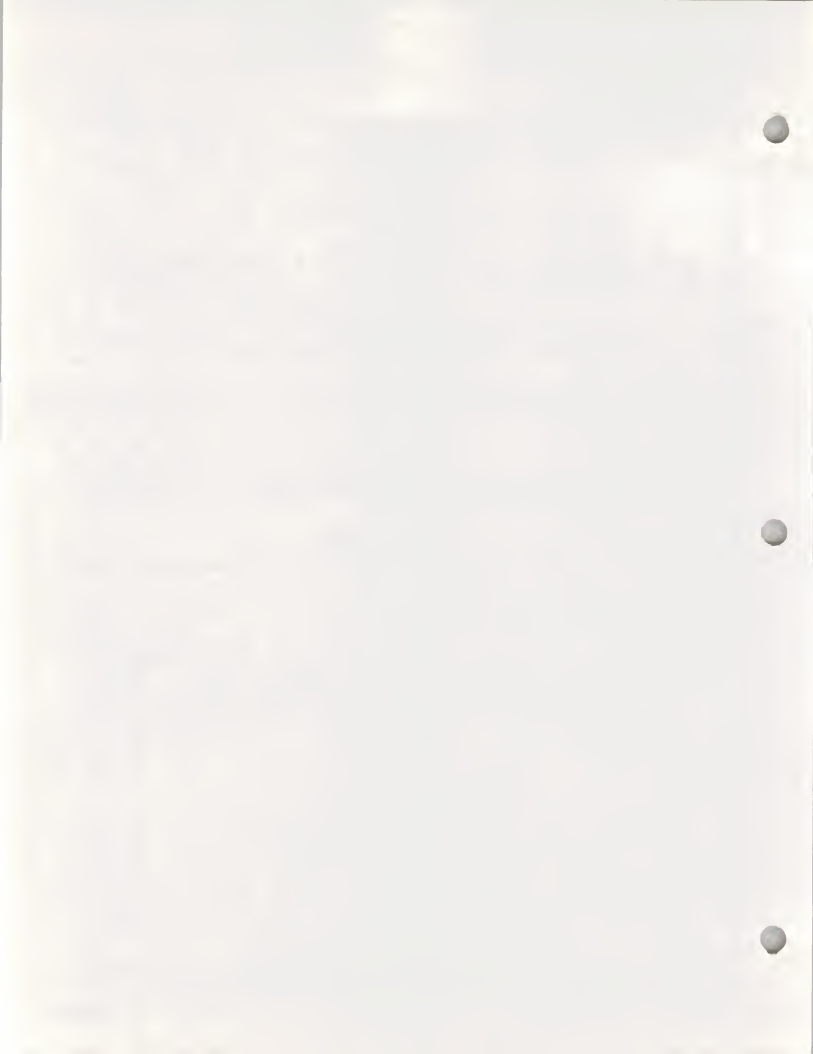
IBM SERVICES BUSINESS

Product Category		OTHER PERIPHERALS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT		Contact G. Kemp
B. REVENUES 1982-1987				
1.	<u>SHIPMENTS</u> (Grade II)	<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	Percent <u>AAGR</u>
-	Back-end processors	\$ 45	\$ 650	70%
-	Floppy disk drives	2,300	6,400	23
-	Disk drives	3,800	10,300	22
-	Tape drives	2,100	5,200	20
-	After-sales support	<u>1,290</u>	<u>2,950</u>	<u>18</u>
	TOTAL	<u>\$ 9,535</u>	<u>\$ 25,500</u>	<u>22%</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 1,090	\$ 2,400	17%
-	Education	*	*	NA
-	Over-the-counter parts	<u>200</u>	<u>550</u>	<u>22</u>
	TOTAL	<u>\$ 1,290</u>	<u>\$ 2,950</u>	<u>18%</u>
3.	<u>SOFTWARE SUPPORT</u>			
		(Negligible)		
*	Negligible			



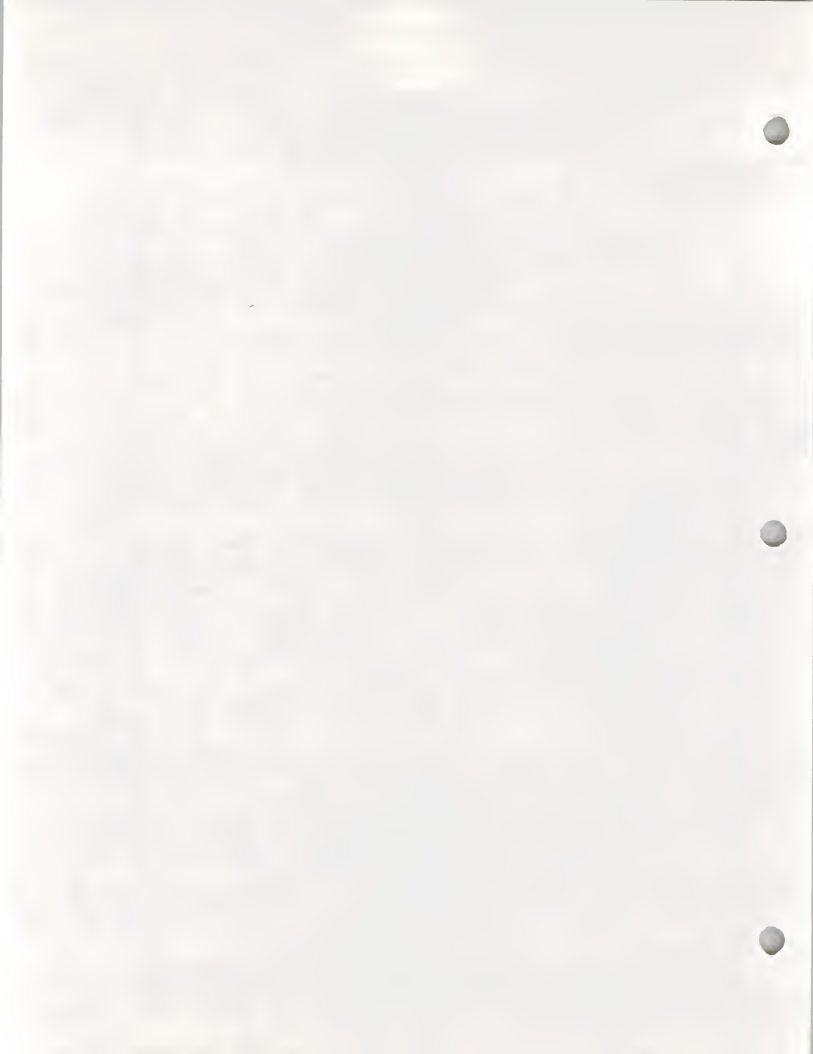
IBM SERVICES BUSINESS

Product Category	OTHER PERIPHERALS		
Last Updated: <u>October 11, 1983</u>		Source: <u>INPUT</u>	Contact <u>G. Kemp</u>
<p style="text-align: center;">C. SUPPORT SERVICES REQUIREMENTS AND ISSUES</p> <p>1. <u>CURRENT</u></p> <ul style="list-style-type: none">• The current service requirements of this category of equipment include the following options:<ul style="list-style-type: none">- Carry-in/ship-in (for floppy disk drives and cassette tape drive only).- Dealer and distributor support contracts with spares, training, and repair center infrastructure (for all categories of products).- Direct, on-site service (for products sold separately or as an integral part of a system). <p>2. <u>FUTURE</u></p> <ul style="list-style-type: none">• There will be little change in the types of service available for this category and in the distribution of revenue from the different services. The only major changes will be:<ul style="list-style-type: none">- A continuous improvement in reliability.- A continuous erosion of all price levels from the floppy disk drive to the back-end processor. <p>3. <u>DECISION MAKER EXPECTATIONS</u></p> <ul style="list-style-type: none">• There will be an increase in user expectations of the product reliability by as much as 15% per annum over the next five years. This will be due to a sharp rise in the use of data bases and the integration of data with text (which increases the size of the average data base and also the dependence of the user on the unit supporting the data base). This is a classic example of an impending squeeze on maintenance margins: increased reliability demands coupled with stagnant maintenance revenue.			



IBM SERVICES BUSINESS

Product Category	OTHER PERIPHERALS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
<p style="text-align: center;">D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">● There is a broad tendency for peripherals and their controllers to house microprocessors that have multiple tasks:<ul style="list-style-type: none">- Storage of command status, queuing of command data, interface with the channel I/O processor/CPU.- Storage and execution of pre-set error recovery procedures, error status data, and error history data.- Storage and execution of firmware instructions that enable the same device to handle a multiplicity of file structures and data recording formats.● This trend toward the inclusion of a limited software capability in peripherals is likely to be expanded to allow remote diagnostic search and user-initiated diagnostics (microdiagnostics) to facilitate fault reporting and maintenance. This trend will ultimately mean that the peripheral service specialist will be moved to the support center, and field maintenance will be done by less-skilled engineers.● This development is a necessary one if field service is to be able to cope with:<ul style="list-style-type: none">- The ever-broadening distribution of sites that increased use of distributed processing brings.- The success of the business personal computer, to which many of the lower end devices (and the back-end processor) will be attached.			



IBM SERVICES BUSINESS

Product Category

OTHER PERIPHERALS

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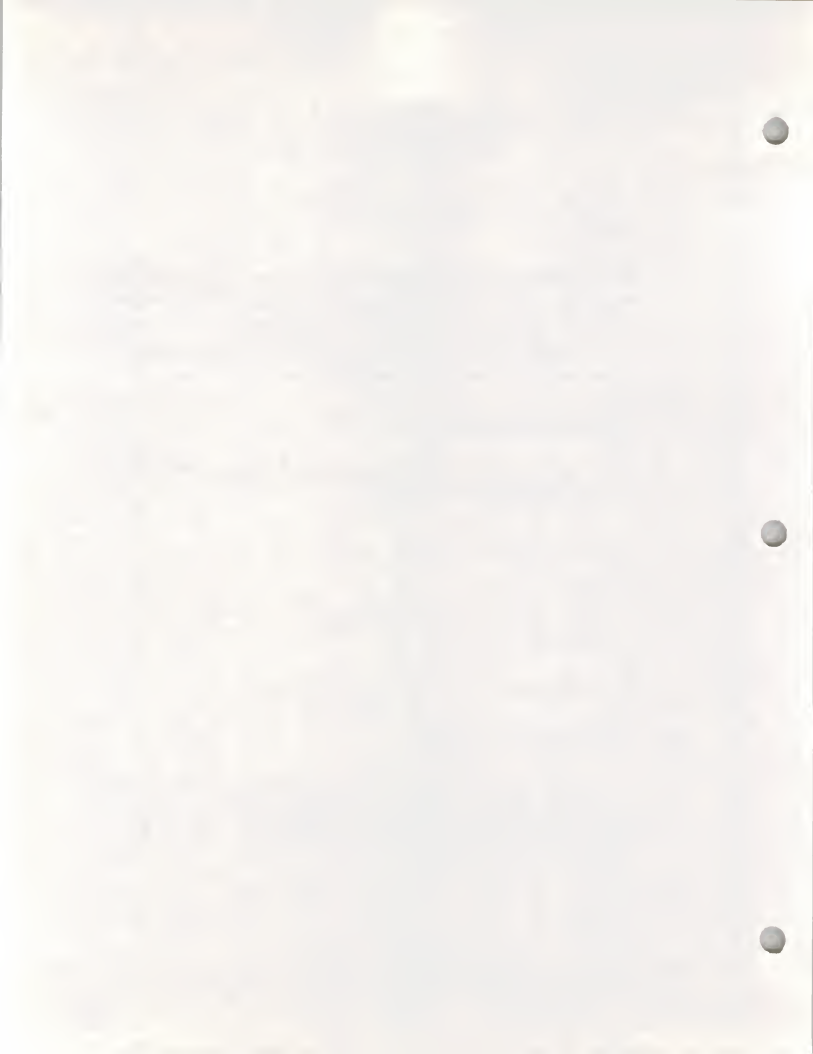
E. ELEMENTS OF SERVICE OFFERINGS

- The mainstay of peripheral service is the on-site visit by an engineer in conjunction with a systems maintenance contract. This is true whatever the source of the product was (i.e., it includes integrated systems, systems sold by value-added resellers, and system vendors). Time and materials contracts are unusual.
- At the low end of some peripheral categories (e.g., floppy disk drives) carry-in/mail-in service is used in conjunction with a repair center. In some instances this is associated with a "loaner" program, replacing the failed unit with the temporary use of an alternate drive for the duration of the repair.
- Over-the-counter parts are essential to the support of value-added resellers, those distributors who do their own maintenance, and third-party maintenance organizations. This is a very lucrative business and one that improves suppliers' service margins.



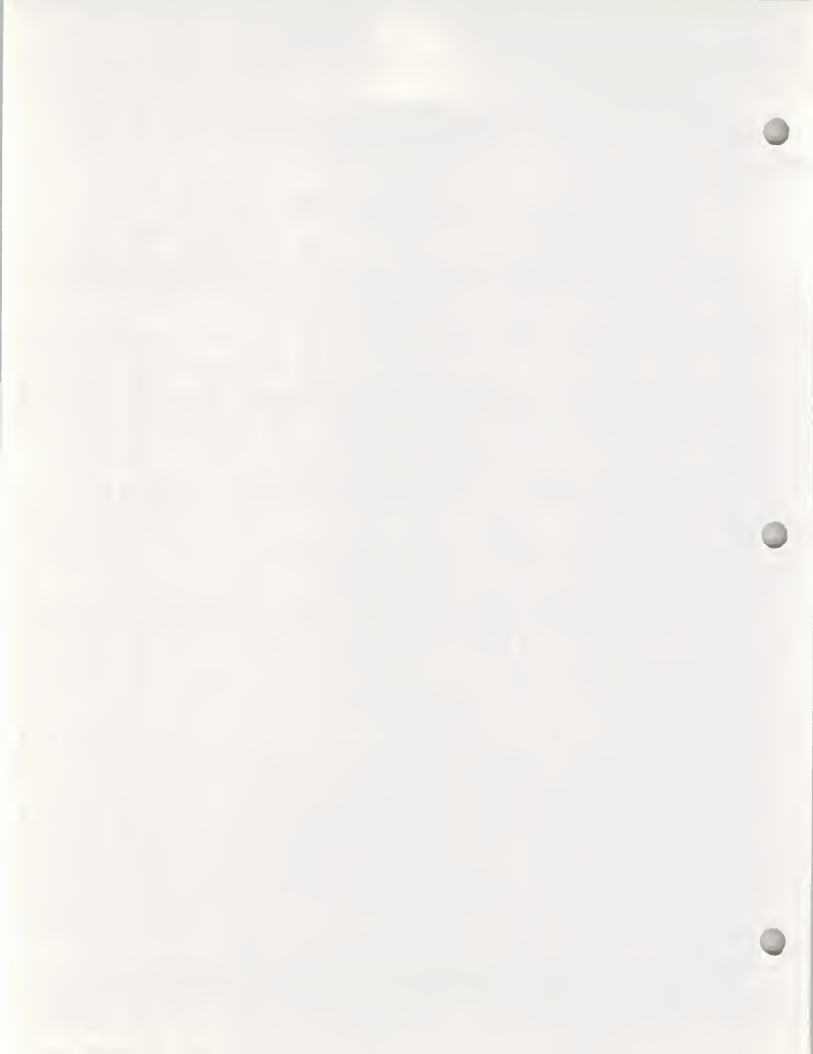
IBM SERVICES BUSINESS

Product Category	OTHER PERIPHERALS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
F. MARKETING PRACTICES			
 1. <u>OVERVIEW</u> ● The principal thrust of peripheral manufacturers who are not system manufacturers has been to sell their products through the value-added reseller, distributor, and dealer using their own sales force to seek out and support these third-party groups. The largest market is still the system vendors, who sell their peripheral products as an integral part of the system sale. 2. <u>DISTRIBUTION CHANNELS</u> ● The approximate volume of business handled by the various distribution channels is indicated below: - System vendors. - System integrators. - Value-added resellers. - Distributors. 3. <u>PRICING AND DISCOUNTING</u> ● Very aggressive discounting policies are used to sell these products through channels other than system vendors. It is common for large contracts to be the subject of "special deals" that are modified on the fly. This makes discounting policies hard to identify.			



IBM SERVICES BUSINESS

Product Category	OTHER PERIPHERALS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
G. MODULE CATEGORIES			
<ul style="list-style-type: none">● Suggested categories:<ul style="list-style-type: none">- Back-end processors:<ul style="list-style-type: none">• Microcomputer support.• Minicomputer support.- Floppy disk drives:<ul style="list-style-type: none">• Five and one-quarter inch.• Eight inch.• Disk cartridge.- Tape drives:<ul style="list-style-type: none">• Cartridge.• Slow speed (25 ips).• Medium speed (50 ips to 125 ips).• High speed (125 ips).• Bit streamer.- Disk drives:<ul style="list-style-type: none">• Fixed disk 200 MB.• Fixed disk 200 MB.• Cartridge.			



11. TELECOMMUNICATIONS EQUIPMENT

— INPUT —



IBM SERVICES BUSINESS

Product Category	TELECOMMUNICATIONS EQUIPMENT		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

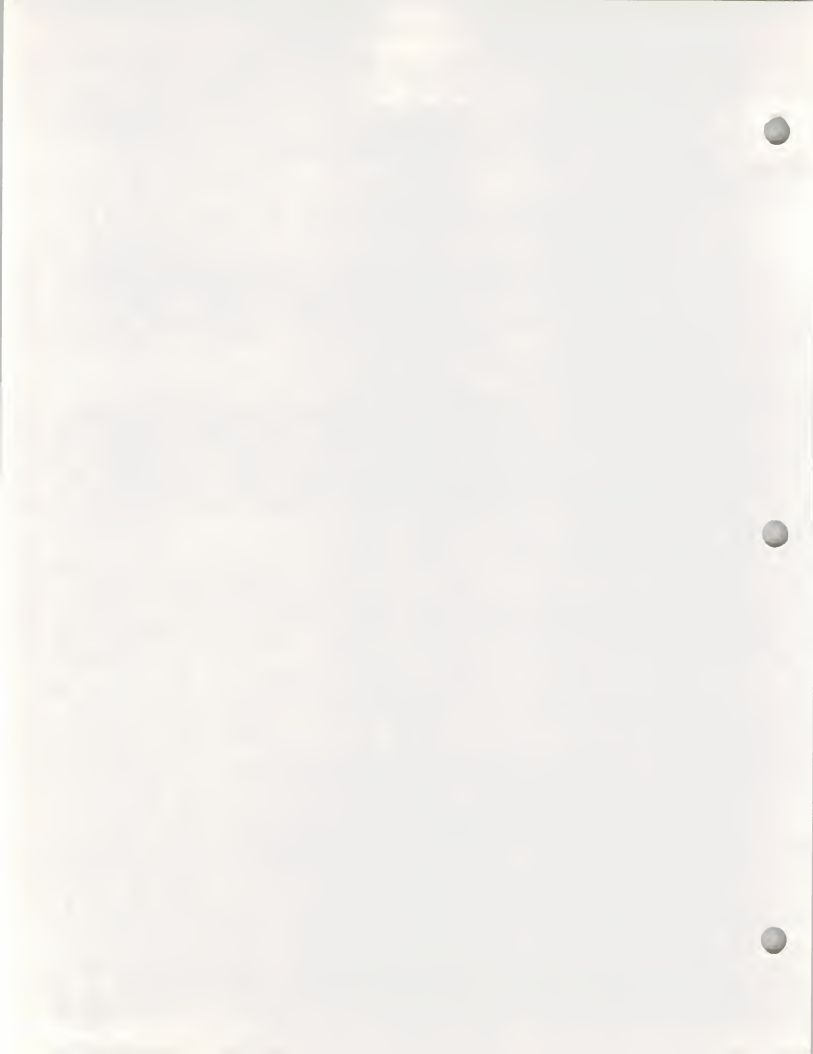
- Telecommunications equipment is that category of devices that enables voice, data, graphics, and text to transit from one location to another. This may involve signal generation, transformation, boosting, multiplexing, concentrating, verifying, encryption, decoding, and switching. It specifically relates to voice data, graphics, and text processing applications (as opposed to simple transit).

2. ENVIRONMENT

- The market for telecommunications has been excellent and has to a large extent resisted the recent economic downturn. In many areas the market is in its infancy: satellite business communications, communicating word processors, communicating personal computers, electronic mail, video conferencing, and many others. Each represents a growth opportunity. In addition, the deregulation of the common carrier/data communications environment will accelerate the development of cost-effective means of transiting data, text, and graphics as well as voice.

3. REVENUE (Grade II)

	1982 (\$ millions)
- Digital data switches	\$1,920
- Front-end processors	725
- Modems and couplers	525
- Facsimile	205
- Teleprinters	225
- Earth stations	510
- Other (LAN, protocol converters)	<u>70</u>
TOTAL	<u>\$4,180</u>

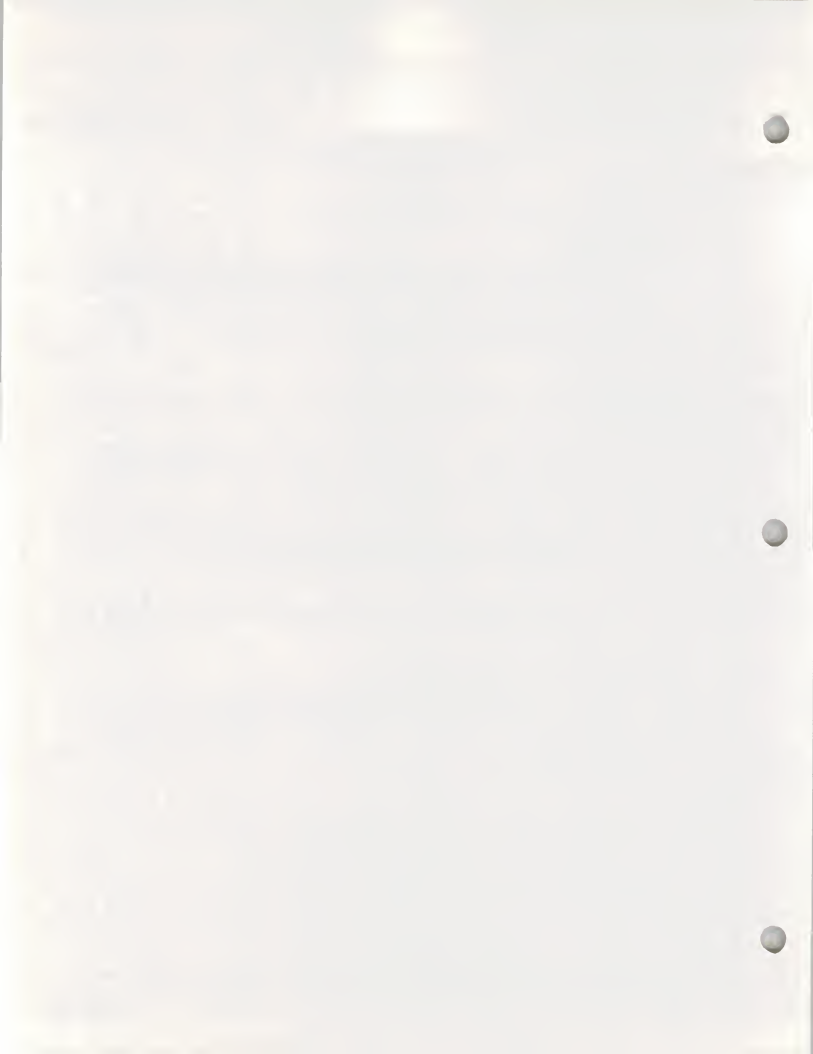


IBM SERVICES BUSINESS

Product Category		TELECOMMUNICATIONS EQUIPMENT		
Last Updated: <u>October 11, 1983</u>		Source: <u>INPUT</u>		Contact <u>G. Kemp</u>
B. REVENUES 1982-1987				
1.	<u>REVENUE FORECAST</u> (Grade II)	<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
-	Hardware shipments			
	• Digital data switches	\$ 1,920	\$ 3,700	14%
	• Front-end processors	725	1,460	15
	• Modems and couplers	525	1,200	18
	• Facsimile	205	415	15
	• Teleprinters	225	120	(12)
	• Earth stations	510	1,220	19
	• Other (LAN, protocol converters)	<u>70</u>	<u>175</u>	<u>20</u>
	TOTAL	<u>\$ 4,180</u>	<u>\$ 8,290</u>	<u>15%</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 360	\$ 725	15%
-	Education	-	-	-
-	Over-the-counter parts	<u>40</u>	<u>70</u>	<u>12</u>
	TOTAL	<u>\$ 400</u>	<u>\$ 795</u>	<u>15%</u>
3.	<u>SOFTWARE SUPPORT</u> (Grade III)			
-	Usually counted in the system to which the telecommunications equipment is connected.			

IBM SERVICES BUSINESS

Product Category	TELECOMMUNICATIONS EQUIPMENT		
Last Updated: <u>October 11, 1983</u>		Source: <u>INPUT</u>	Contact <u>G. Kemp</u>
C. SUPPORT SERVICES REQUIREMENTS AND ISSUES			
 1. <u>CURRENT</u>			
<ul style="list-style-type: none">• This category of equipment is comprised of many different service needs, ranging from zero (e.g., protocol converters, which are essentially black boxes with extremely high MTBF) to very high (e.g., teleprinters that have a low MTBF and fairly high demand for rapid service response). In addition, there is at least one category of equipment that is maintained as part of the on-site system to which it is attached (i.e., the front-end processor).			
 2. <u>FUTURE</u>			
<ul style="list-style-type: none">• Three categories of equipment appear to be necessary in planning service requirements:<ul style="list-style-type: none">- Standalone "black box" equipment (includes data concentration equipment, modems and couplers, hardware-based protocol converters, and local area network connectors).- System-related equipment, which is maintained as an integral part of the system to which it is attached (includes front-end processors, local area networks, software-based protocol converters, and some modems and couplers).- In-network equipment, which requires substantial service attention (includes earth stations, teleprinters, facsimile devices, and digital data switches).			
 3. <u>DECISION MAKER EXPECTATIONS</u>			
<ul style="list-style-type: none">• All communications equipment have the same service characteristics: their users expect very high reliability, and the users' frustration with unit failure is directly proportional to the volume of data traffic for the unit. Users expect the same average availability for these devices as for large mainframe systems: 99.7%.			



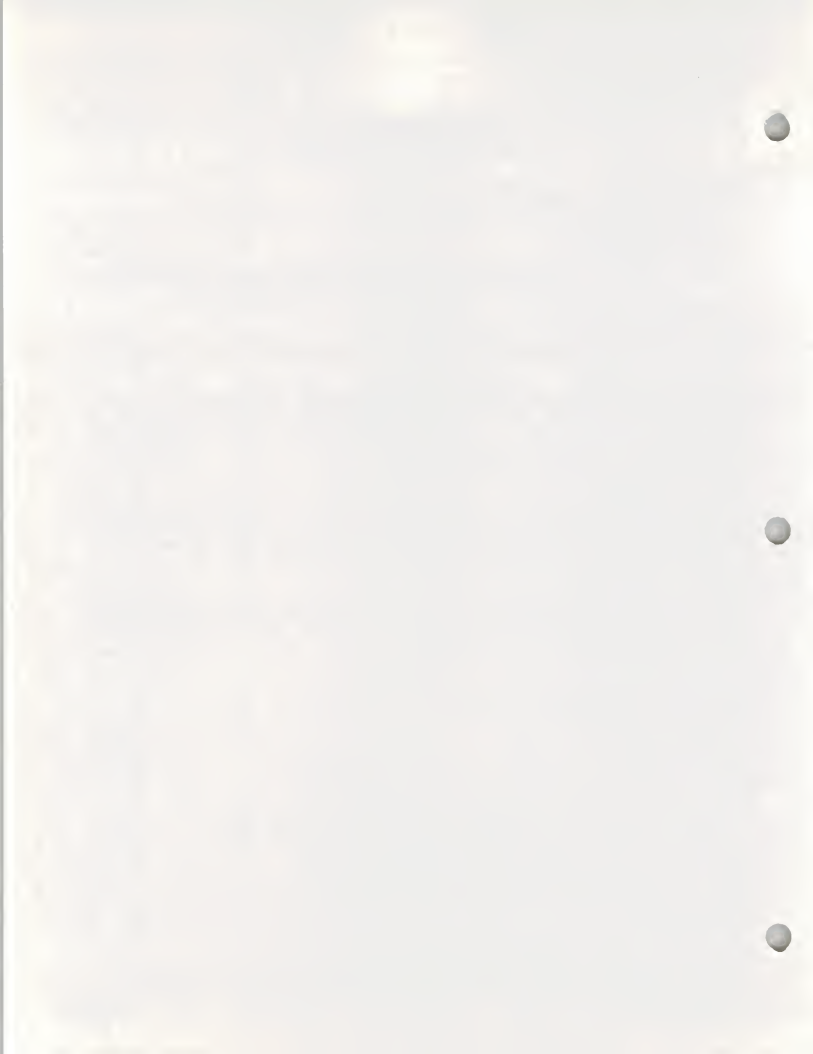
IBM SERVICES BUSINESS

Product Category	TELECOMMUNICATIONS EQUIPMENT		
Last Updated: <u>October 11, 1983</u>	Source: <u>INPUT</u>	Contact <u>G. Kemp</u>	
<p style="text-align: center;">D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">• The main technology issue that affects the service support of telecommunications equipment is the developing ability of most in-network equipment to self-diagnose and to transmit status remotely. These abilities enable remote fault determination both at the customer site and at intermediary network nodes that may be causing the problem.• Telecommunications equipment is considered special equipment by most vendor service organizations. However, there is a rapidly growing trend for most DP installations to use either local or remote networks or connections. This will ultimately mean that the majority of systems field engineers will need to have at least a basic understanding of the service procedures of telecommunications equipment.• Another looming complication, one that has yet to be translated into reality, is the possibility of the integration of data, text, voice, and graphics information that telecommunications equipment can carry. This introduces environments unfamiliar to many field engineering organizations.			



IBM SERVICES BUSINESS

Product Category	TELECOMMUNICATIONS EQUIPMENT		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp
E. ELEMENTS OF SERVICE OFFERINGS			
<ul style="list-style-type: none">• These include:<ul style="list-style-type: none">- Network planning/consultancy (which includes the impact of add-on equipment on the response and/or load of the installed network).- Standard maintenance services (i.e., on-call and contract services).- "Automatic" (on-line monitoring) services that provide for the automatic dispatch of service engineers as problems occur by having the vendor's diagnostic/repair centers tied into the operating network with 24-hour real-time diagnostics.- Self-diagnosing equipment that is sold with in-board firmware capable of remotely transmitting status information to a diagnostic center.- Redundant hardware modules capable of being remotely reconfigured or automatically self-configured with transmission of new status to the diagnostic and repair center.			



IBM SERVICES BUSINESS

Product Category	TELECOMMUNICATIONS EQUIPMENT		
Last Updated: <u>October 11, 1983</u>	Source: <u>INPUT</u>	Contact <u>G. Kemp</u>	
<p style="text-align: center;">F. MARKETING PRACTICES</p>			
<p>1. <u>OVERVIEW</u></p> <ul style="list-style-type: none">• The telecommunications equipment environment is moving steadily toward the specialist value-added resellers (network consultants/architects who have local area network, distributed network, or integrated network expertise and whose knowledge enables them to select hardware compatible with their design).• Large companies (Fortune 500, banks, insurance companies, etc.) often have their own DC specialists; smaller companies have none. The same applies to vendors: the large ones have specialist DC support to offer, usually in conjunction with their own equipment; the small ones do not, or if they do, they are limited to one aspect of the network need.			
<p>2. <u>DISTRIBUTION CHANNELS</u></p> <ul style="list-style-type: none">• Distribution channels vary from one class of telecommunications equipment to another, but they are generally either direct sales or value-added resellers.			
<p>3. <u>PRICING AND DISCOUNTING</u></p> <ul style="list-style-type: none">• Telecommunications equipment has been experiencing a 10-15% erosion of prices per year, particularly at the middle price range (e.g., digital data switches). Low-end products have experienced a price erosion of twice that rate (e.g., modems, couplers, and protocol converters).• Discounting is volume related and not usually found on single-unit sales.			



IBM SERVICES BUSINESS

Product Category	TELECOMMUNICATIONS EQUIPMENT		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
G. MODULE CATEGORIES			
<ul style="list-style-type: none">● Suggested categories are the same as those used in this section, with "other" split into its component parts.<ul style="list-style-type: none">- Digital data switches.- Data concentration equipment.- Front-end processors.- Modems and couplers.- Facsimile devices.- Teleprinters.- Earth stations.- Local area networks.- Protocol converters.			



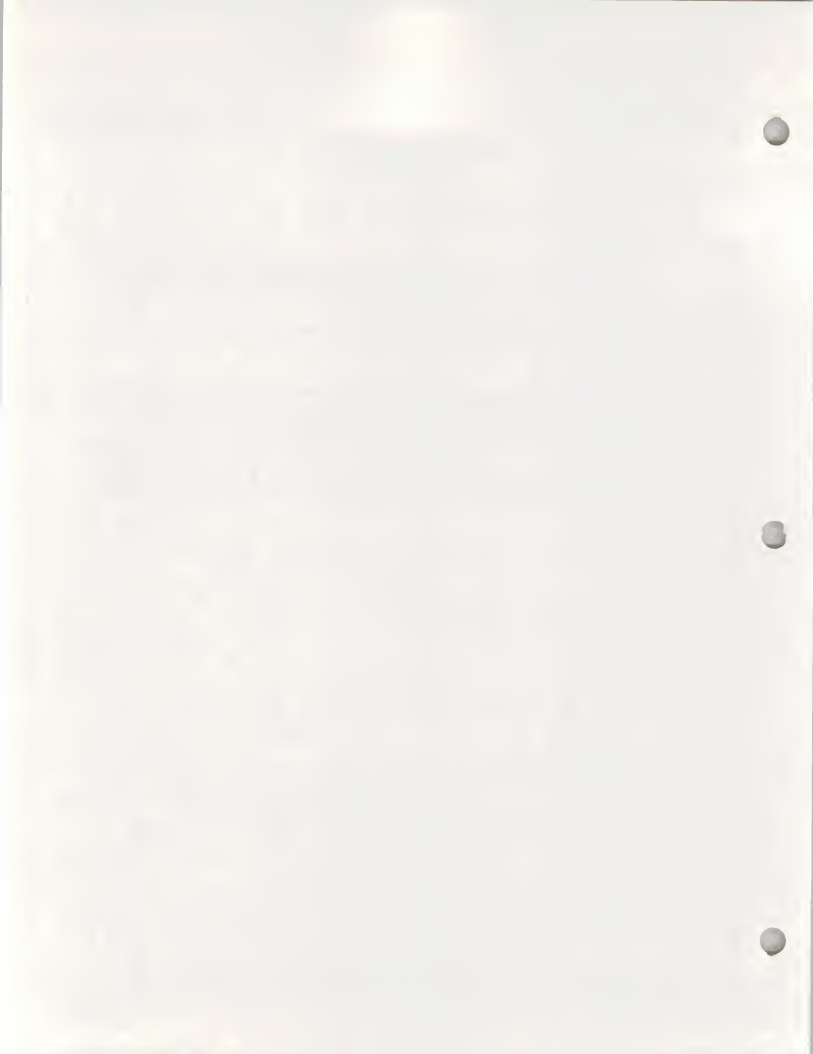
12. TYPEWRITERS/WORD PROCESSORS

— INPUT —



IBM SERVICES BUSINESS

Product Category	TYPEWRITERS/WORD PROCESSORS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
A. ENVIRONMENT OVERVIEW			
1. <u>DEFINITION</u>			
<ul style="list-style-type: none"> This category includes electronic typewriters and single-station and multi-station word processors, but excludes other devices (e.g., personal computers and terminals) used as word processors. It also includes communicating typewriters and communicating word processors. Integrated systems (which handle data, text, graphics, and eventually voice processing) are excluded. 			
2. <u>ENVIRONMENT</u>			
<ul style="list-style-type: none"> The white-collar employees who use and are served by these text manipulation and storage products are now close to half the U.S. labor force and are increasing at 20% per annum - faster than the total workforce. Office automation, of which these products are a part, is now seen as the next phase of automation for U.S. businesses. The key to the successful implementation of office automation is the free exchange, correction, manipulation, and storage of the text once captured. Typewriters do not allow this; word processors do to a limited extent. 			
3. <u>REVENUE</u> (Grade II)			
<u>Shipment, (\$ millions)</u>			
-	Electromechanical typewriters	\$	950
-	Electronic typewriters		408
-	Single-station word processors		1,656
-	Multistation word processors		<u>698</u>
	TOTAL	\$	<u>3,712</u>
4. <u>LEADING VENDORS</u>			
<u>Percent of 1982 User Expenditures</u>			
-	IBM		30%
-	Exxon		8
-	Olivetti		7
-	Wang		6



IBM SERVICES BUSINESS

Product Category

TYPEWRITERS/WORD PROCESSORS

Last Updated: October 11, 1983

Source: INPUT

Contact G. Kemp

B. REVENUES 1982-1987

1. <u>REVENUE FORECAST</u> (Grade II)		<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
-	Hardware shipments	\$ 3,712	\$ 10,000	22%
-	Software sales	30	140	35
-	After-sales support	<u>1,580</u>	<u>3,930</u>	<u>20</u>
	TOTAL	\$ <u>5,322</u>	\$ <u>14,070</u>	<u>21%</u>
2. <u>HARDWARE SUPPORT</u> (Grade III)				
-	Maintenance	\$ 1,440	\$ 3,583	20%
-	Education	10	27	22
-	Over-the-counter parts	<u>120</u>	<u>270</u>	<u>18</u>
	TOTAL	\$ <u>1,570</u>	\$ <u>3,880</u>	<u>20%</u>
3. <u>SOFTWARE SUPPORT</u> (Grade III)				
-	Maintenance	\$ 10	\$ 45	35%
-	Education	*	*	NA
-	Installation	<u>*</u>	<u>5</u>	<u>NA</u>
	TOTAL	\$ <u>10</u>	\$ <u>50</u>	<u>38%</u>

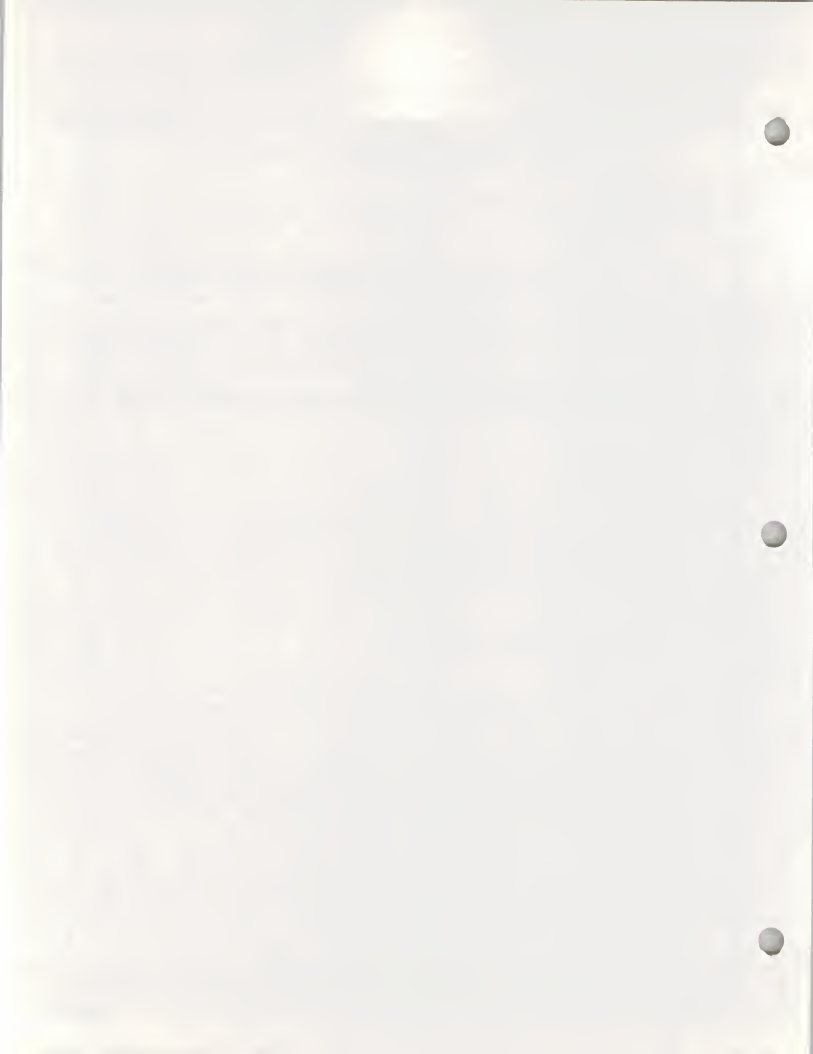
* Negligible

IBM SERVICES BUSINESS

Product Category	TYPEWRITERS/WORD PROCESSORS		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp

C. SUPPORT SERVICES REQUIREMENTS AND ISSUES

- CURRENT
 - Word processors require support service with a response time and an MTBF approximately three times those of a typewriter. As with other equipment categories, the response time and availability requirements are proportional to the net volume of text processed by the unit. (Net refers to finished text page volume: word processors are often used as scratch pads by text originators, and each page is processed three times; typewriters are not used in this manner).
- FUTURE
 - There are no visible trends that would modify the above requirements, except the global trend in all equipment categories for average unit reliability to increase at approximately 20% per annum. This does not diminish the response time requirement but makes it a less frequent requirement.
- DECISION MAKER EXPECTATIONS
 - The "responsive" vendor provides a one-hour response. However, there are many vendors who respond in six to eight hours. The user's expectation is proportional to his dependency on the unit, which varies considerably from occasional use to an intensive 10-hour a day workshop environment. Actual requirements vary from one hour to eight hours (see INPUT's Analysis of User Requirements for Office Products, September 1983).

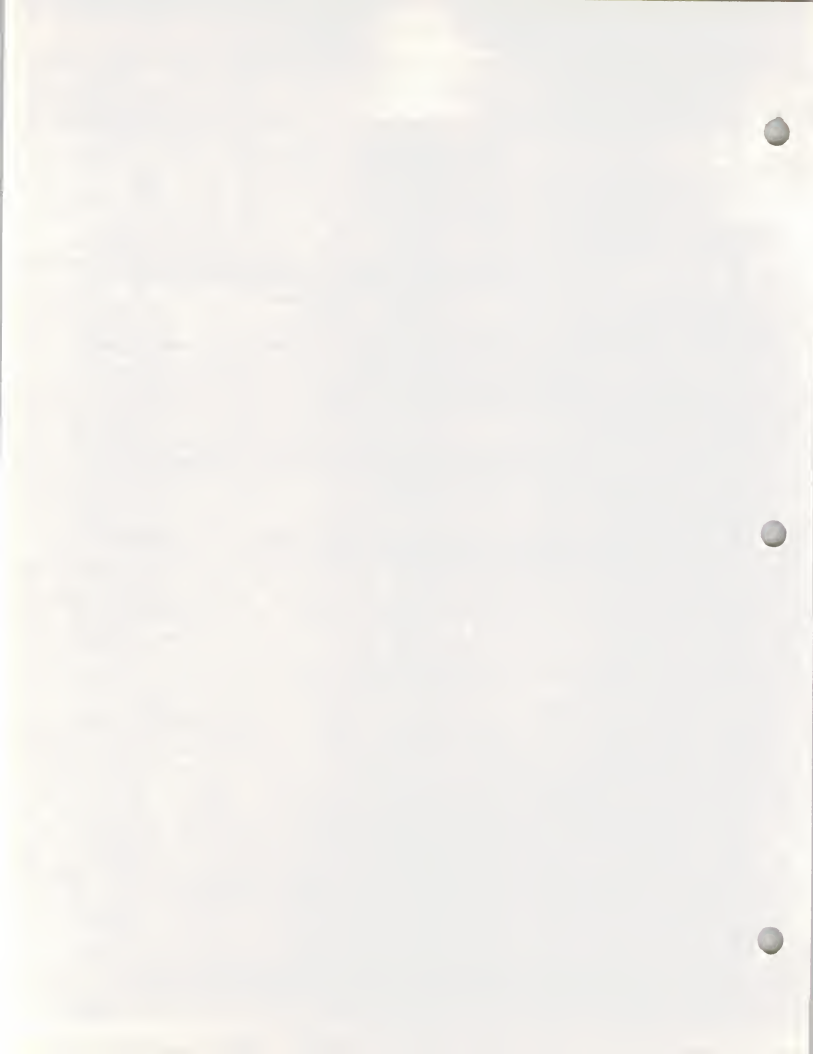


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Product Category	TYPEWRITERS/WORD PROCESSORS		
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<p style="text-align: center;">D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none">● Again the principal technology development for both typewriters and word processors will be their interconnection and link to local area and other networks. The significance of this to support services has already been discussed in the chapter on workstations.● Two further issues are of concern in the word processor market, particularly the multistation end:<ul style="list-style-type: none">- Software content (application specific as well as data base management and communications) will increase sharply over the next five years: this will have an impact on the FE skill mix needed to service this product base.- Interfacing will be with a broad range of devices with dissimilar characteristics: when this "system" of interlinked devices fails, it will require well-defined diagnostics to isolate the fault (which could easily be load-induced or timing-induced and therefore transient and difficult to find).			

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E. ELEMENTS OF SERVICE OFFERINGS			
<ul style="list-style-type: none">• There is one category of service:<ul style="list-style-type: none">- On-site maintenance of individual units (the standard for typewriters of all classes and word processors of all classes).- Response time requirements are usually below eight hours for a typewriter and below four hours for word processors (average of 3.5 in INPUT's 1983 survey).• On-call and contract maintenance are offered on both kinds of equipment, but the annual contract is the most prevalent, with automatic renewal at year-end.• System reliability on both categories of equipment is high and increasing. MTBF of three months is common; six months is frequent.			



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F. MARKETING PRACTICES

1. OVERVIEW

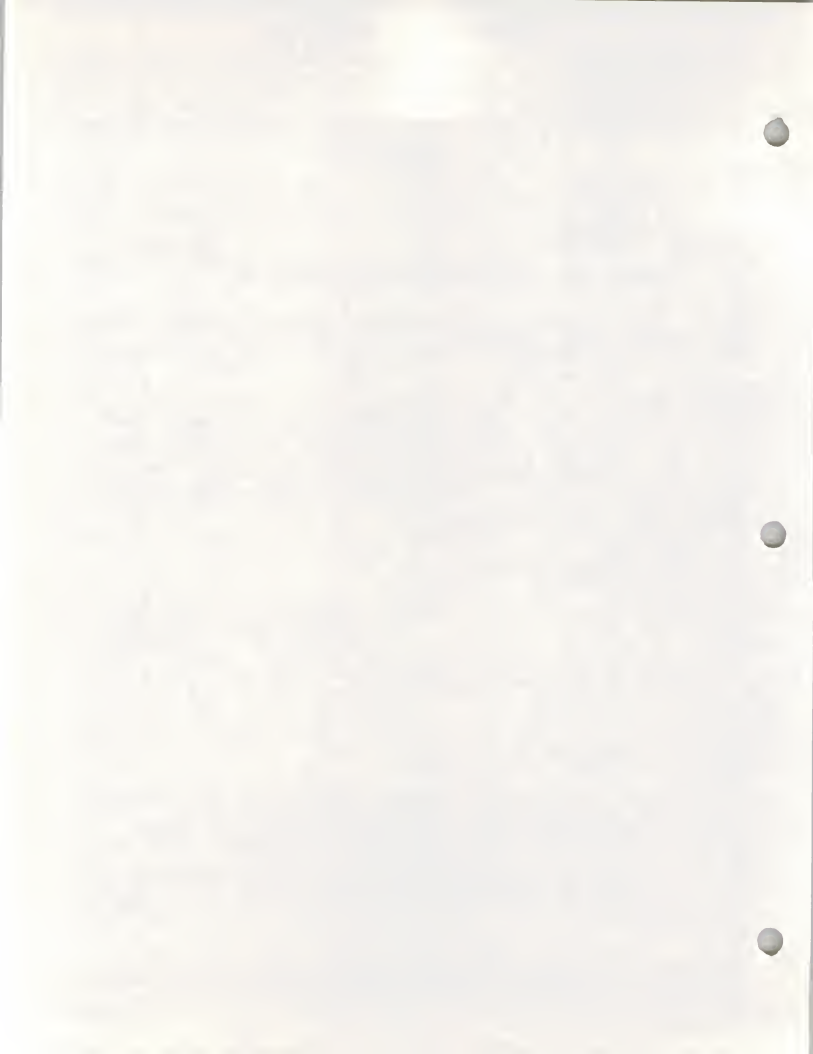
- There are two categories of equipment to be considered:
 - Electronic typewriters, which are handled predominantly like their nonelectronic counterparts and are sold through dealers and through distributors.
 - Word processors, which are sold both through direct sales and distributor channels. This cannot continue: the communicating word processors (at interoffice level through LANs and intracompany level through networks) will require a level of system knowledge most distributors and dealers do not have.

2. DISTRIBUTION CHANNELS

	Percent of 1982 Shipments		Percent of 1987 Shipments	
	<u>Direct</u>	<u>Other</u>	<u>Direct</u>	<u>Other</u>
- Electronic typewriters	15%	85%	5%	95%
- Word processors	90	10	95	5

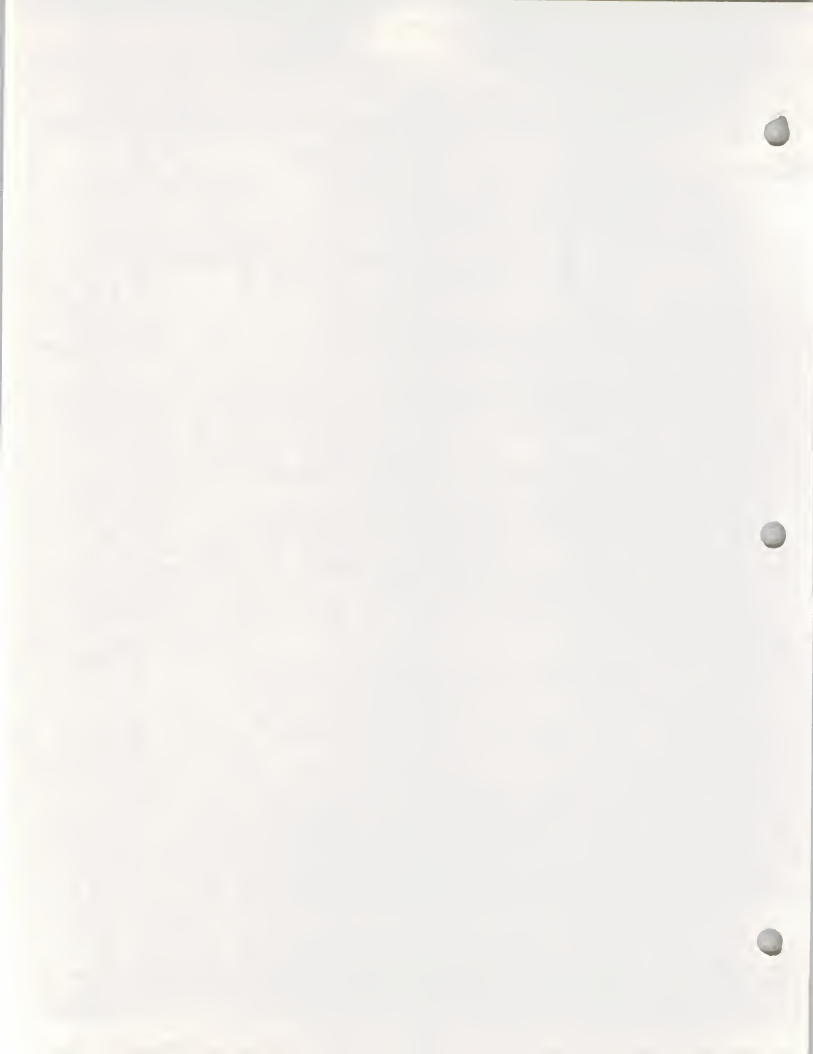
3. PRICING AND DISCOUNTING

- Typewriter pricing is very aggressive with constant price erosion. The word processor battle has been for functional capabilities and the integration of the same into a single unit. Price comparison has therefore been very difficult. Little price erosion is expected, but major functional improvements with higher integration of same are expected. Discounting is contract by contract.



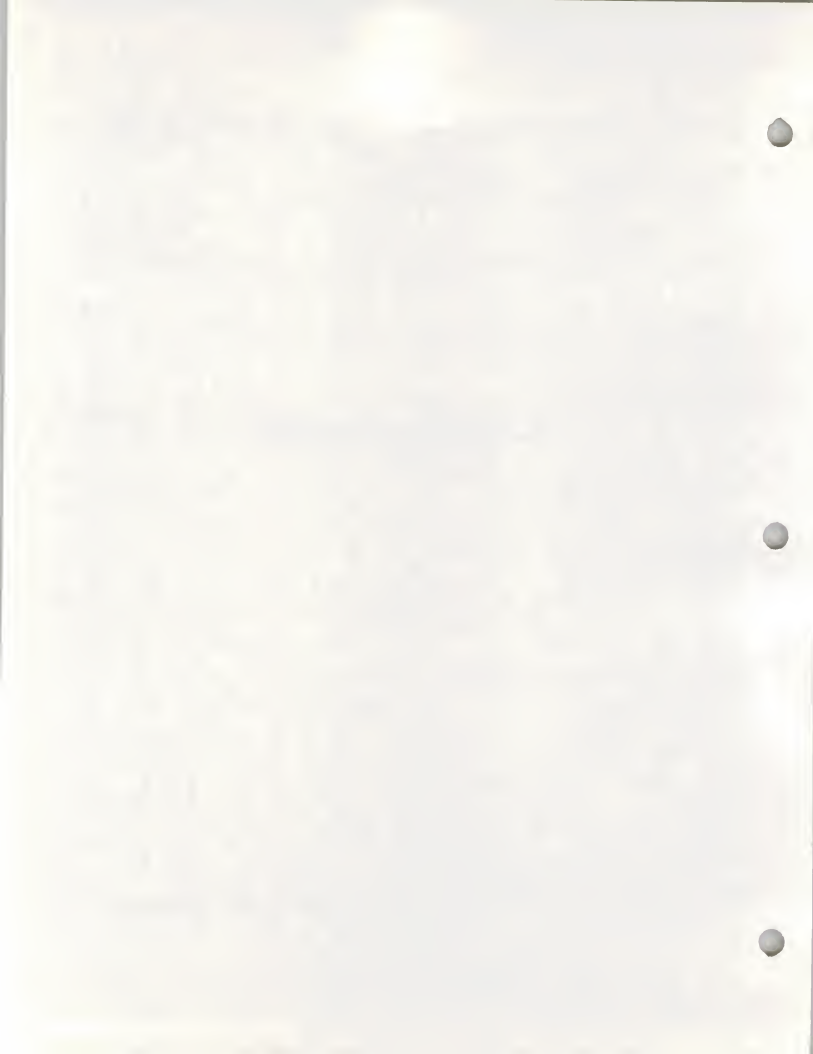
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Product Category	TYPEWRITERS/WORD PROCESSORS		
Last Updated: <u>October 11, 1983</u>		Source: INPUT	Contact G. Kemp
G. MODULE CATEGORIES			
<ul style="list-style-type: none">• Suggested module categories:<ul style="list-style-type: none">- Electronic typewriters.- Communicating memory typewriters.- Single-station word processors (standalone).- Multistation word processors (standalone).- Single-station word processors (communicating).- Multistation word processors (communicating).- OCR page readers for word processors (e.g., the DEST workless station).			



13. BANKING EQUIPMENT

— INPUT —



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Product Category	BANKING EQUIPMENT (EXCLUDING PROCESSORS)		
Last Updated:	October 11, 1983	Source: INPUT	Contact G. Kemp

A. ENVIRONMENT OVERVIEW

1. DEFINITION

- This category includes manned teller machines (MTMs), automatic teller machines (ATMs), voice response equipment, and magnetic ink recognition (MICR) readers for processing checks, deposit slips, and demand deposit accounting. It excludes the mainframe systems that support the processing workload of the banking community, and electronic funds transfer, which usually occurs on processors and terminals counted elsewhere.

2. ENVIRONMENT

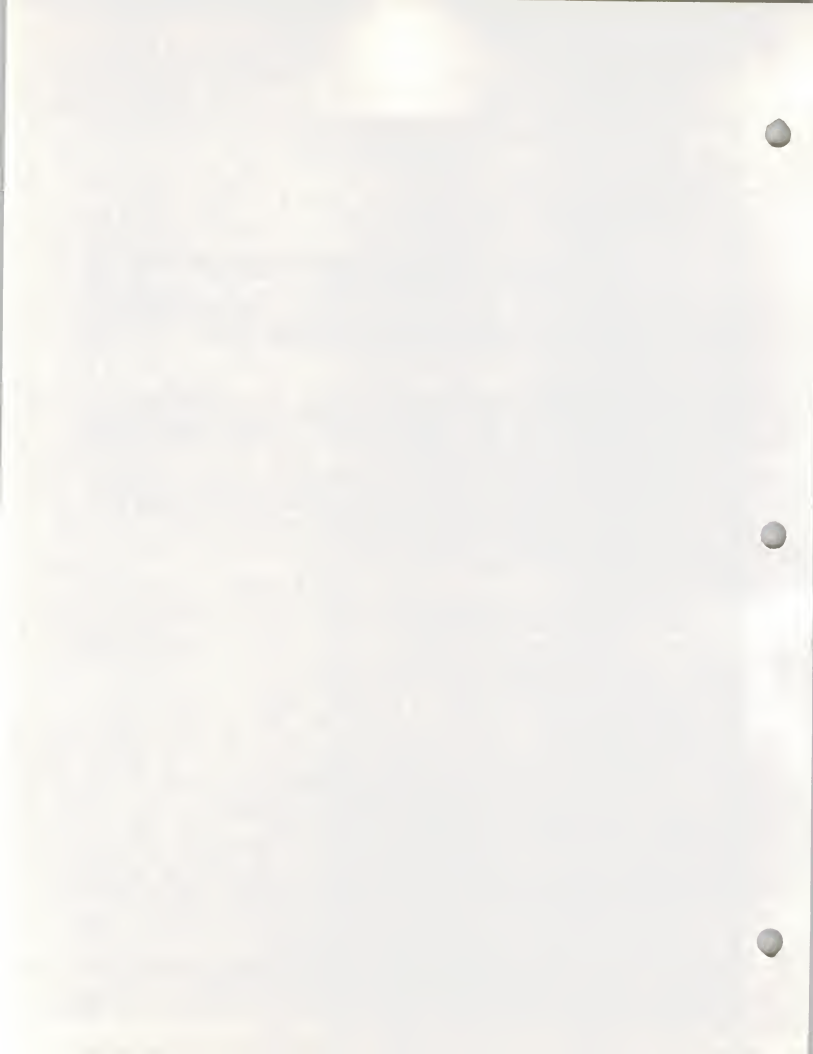
- The key characteristic of this environment, excluding the MICR readers that are an internal banking requirement, is the drive underway to place the ATM at the point of consumer need/transaction (e.g., in condominiums, transportation hubs, stores, or gas stations).
- Because of this recent trend, the market is about to change character; the vendor market share will alter rapidly; and the service requirements will be redefined in parallel with the redeployment of the installed base.

3. REVENUE (Grade II)

	<u>1982 (\$ millions)</u>
- Hardware shipments	\$173
- Software sales	5
- After-sales support	<u>26</u>
TOTAL	<u>\$204</u>

4. LEADING VENDORS

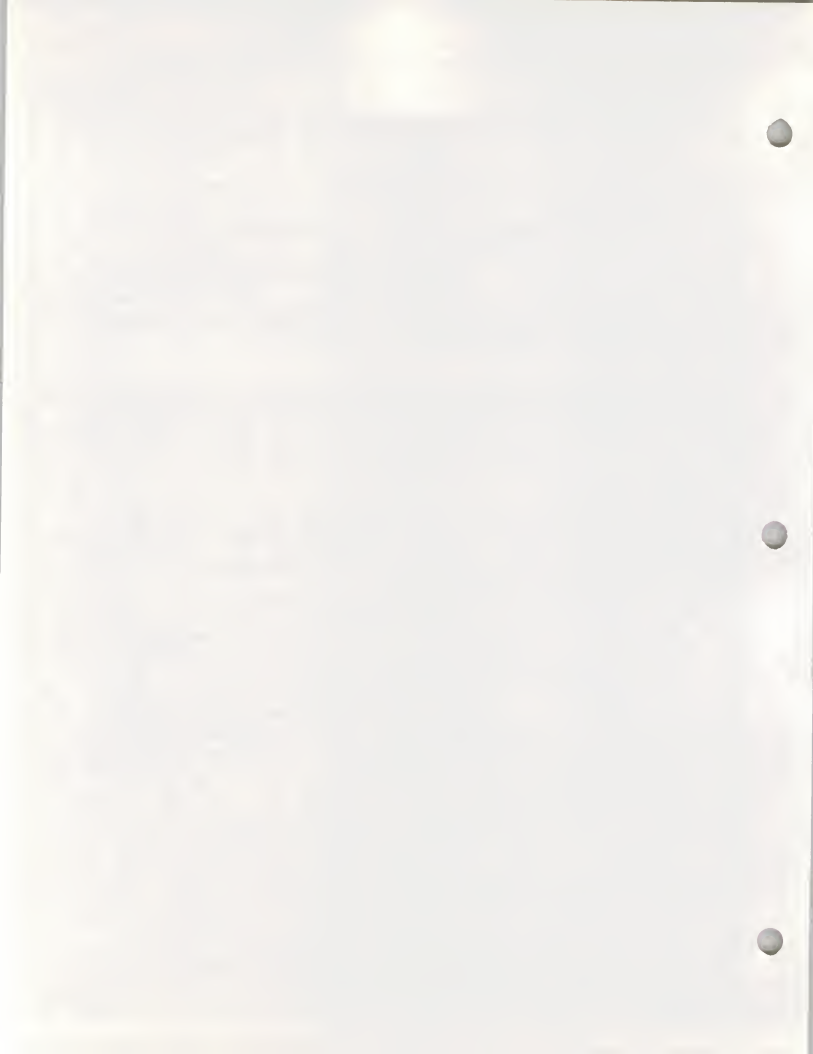
	<u>Percent of 1982 User Expenditures</u>
- Diebold	24%
- IBM	13
- Docutel	9
- NCR	8



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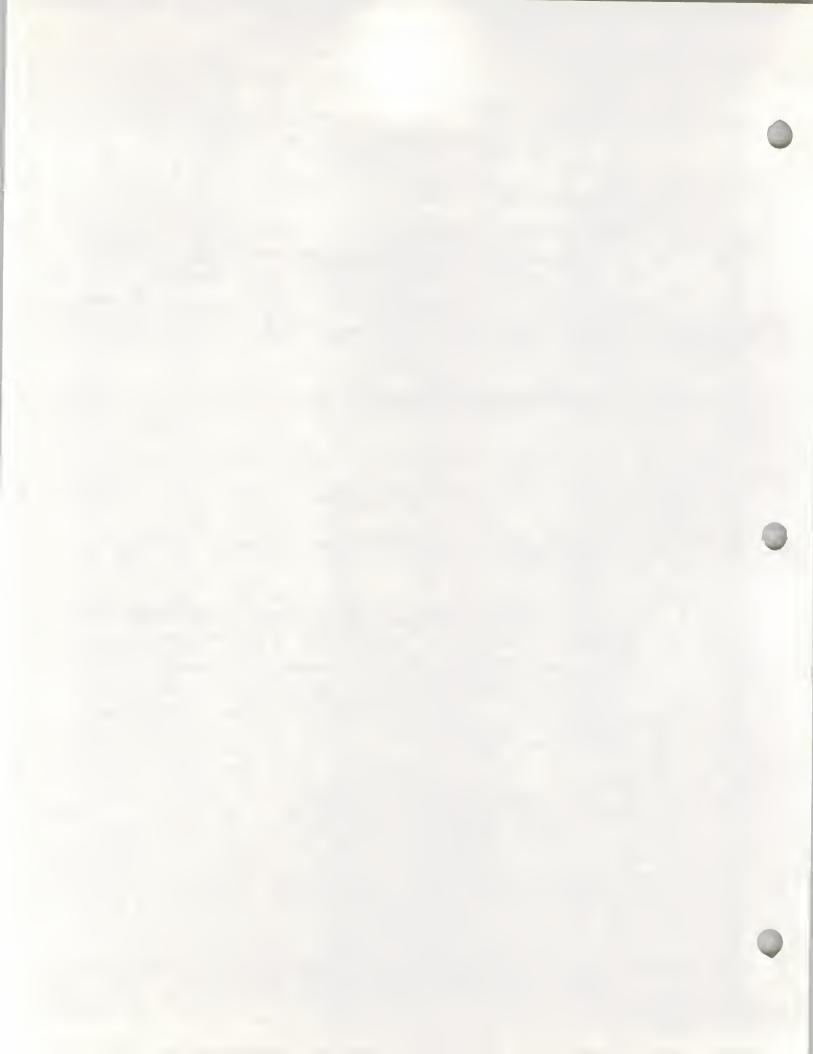
Product Category		BANKING EQUIPMENT (EXCLUDING PROCESSORS)		
Last Updated: <u>October 11, 1983</u>		Source: INPUT		Contact G. Kemp
B. REVENUES 1982-1987				
1.	<u>REVENUE FORECAST</u> (Grade II)	<u>\$ Millions</u>		
		<u>1982</u>	<u>1987</u>	<u>Percent AAGR</u>
-	Hardware shipments			
	MICR	\$ 45	\$ 66	8%
	ATM	95	425	35
	Voice response	6	15	20
	MTM	25	19	(5)
-	Software sales	5	22	35
-	After-sales support	<u>26</u>	<u>92</u>	<u>28</u>
	TOTAL	<u>\$204</u>	<u>\$639</u>	<u>26%</u>
2.	<u>HARDWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 23	\$ 80	28%
-	Education	*	*	NA
-	Over-the-counter parts	<u>3</u>	<u>10</u>	<u>28</u>
	TOTAL	<u>\$ 26</u>	<u>\$ 90</u>	<u>28%</u>
3.	<u>SOFTWARE SUPPORT</u> (Grade III)			
-	Maintenance	\$ 0.5	\$ 2	35%
-	Education	*	*	NA
-	Installation	<u>*</u>	<u>*</u>	<u>NA</u>
	TOTAL	<u>\$ 0.5</u>	<u>\$ 2</u>	<u>35%</u>
*	Negligible			

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C. SUPPORT SERVICES REQUIREMENTS AND ISSUES			
<ul style="list-style-type: none">• The different categories of equipment have to be discussed separately.• MICR equipment is expensive (up to \$150,000 per unit), widely used (several thousands installed), in-house, and basically unreliable. At the same time it is a fundamental business processing tool for the banks that require large-main-frame service response.• ATM equipment is varied in its functionality, its cost, and its location of installation, is subject to much abuse by the consumer, and is being dispersed more and more widely from the center that processes the data the ATM handles.• EFT terminals are going the same route, being installed in centers of consumer activity and being subject to the same security and abuse problems as the ATM. Their function will be progressively integrated into ATM units (and into POS terminals counted elsewhere).• Unlike other terminal categories, the ATM/EFT cannot be duplicated at the installation site as a means of providing backup in case of failure, nor are they portable. Downtime is therefore a critical measurement and a low response time is crucial. On-site service, perhaps supplemented by remote diagnostics, seems inevitable. Unfortunately, the devices themselves are relatively cheap (\$5,000 each), and such service could easily cost up to 30% of the purchase price per annum.			



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<p style="text-align: center;">D. TECHNOLOGY ISSUES AFFECTING SUPPORT</p> <ul style="list-style-type: none"> • Again, the principal "technology" issue affecting support (though not in the true sense a technology) is the rising use of telecommunications in connection with the largest share of the market: ATMs. ATM shared networks, of which there are already several hundred installed, will grow very rapidly in the next four years, placing the same kind of demands on field service personnel as the workstation market: <ul style="list-style-type: none"> - Network planning consultancy. - In-network maintenance. - Remote diagnostic and status handling. - Wide distribution of the installed base and a relatively low unit price (\$5,000). • The other major aspect of banking equipment service is security maintenance (i.e., the maintenance of the security packages in which the banking equipment is sold). Aside from the physical security of the packages (booths, screens, locks, etc.), there is a maintenance requirement for tamper-proof keyboards, displays, etc., which will probably have to be included in the maintenance of the unit itself. 			



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E. ELEMENTS OF SERVICE OFFERINGS

- The elements of banking equipment service offerings are:
 - Maintenance of in-house MICR equipment, which has similar maintenance characteristics to copiers: low MTBF, fast response time needs, eletromechanical service content.
 - Maintenance of a declining population of MTM equipment, also in-house, which has medium MTBF, an eight-hour response time need, and electromechanical service content.
 - Maintenance of a widely dispersed and rapidly growing base of ATMs, many of which have a network interface, and most of which will have security packages; the need is for moderate response (eight hours), on-site service of electromechanical devices.
 - Maintenance of a small but rapidly growing base of in-house, electronic voice response systems, also interfaced with a network.



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F. MARKETING PRACTICES

1. OVERVIEW

- All of the banking equipment included in this section has been sold by direct sales to the banking and finance community until now, but a major shift is under way that is partly due to banking deregulation and partly due to the entry of nonbank companies (e.g., ARCO, Sears, Gulf, and Western). The emerging new environment for ATMs includes general retailers, stock brokerage firms, insurance companies, travel agencies, government offices, and many more. This deployment of ATMs in the retail environment will have a profound influence on products, vendor revenue shares, revenue strategies, and service needs.

2. DISTRIBUTION CHANNELS

- Until now the principal sales distribution channel has been direct, either to the bank manager or the bank branch. Now the banking environment is slowing its installations sharply (because of the contraction in the number of bank branches and the high level of penetration of the banking environment), and the emerging environments consist of chains of retail outlets and third-party owners of the networks to which the ATMs will be attached.

3. PRICING AND DISCOUNTING

- Price erosion has been at approximately 15% per annum, but the functional content of the product has been the main battleground. Discounting only applies to MTM and ATM equipment and follows the accepted industry standards for terminals.



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G. MODULE CATEGORIES			
<ul style="list-style-type: none">• Suggested module categories:<ul style="list-style-type: none">- MICR equipment.- OCR equipment.- MTM terminals.- ATM (banks).- ATM (retail).- Voice response.- Home banking equipment.			

